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# INDUSTRIAL FISHERY PRODUCTS

# SITUATION & OUTLOOK

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Current Economic Analysis · I4 · January 1969

Published quarterly by: UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF COMMERCIAL FISHERIES

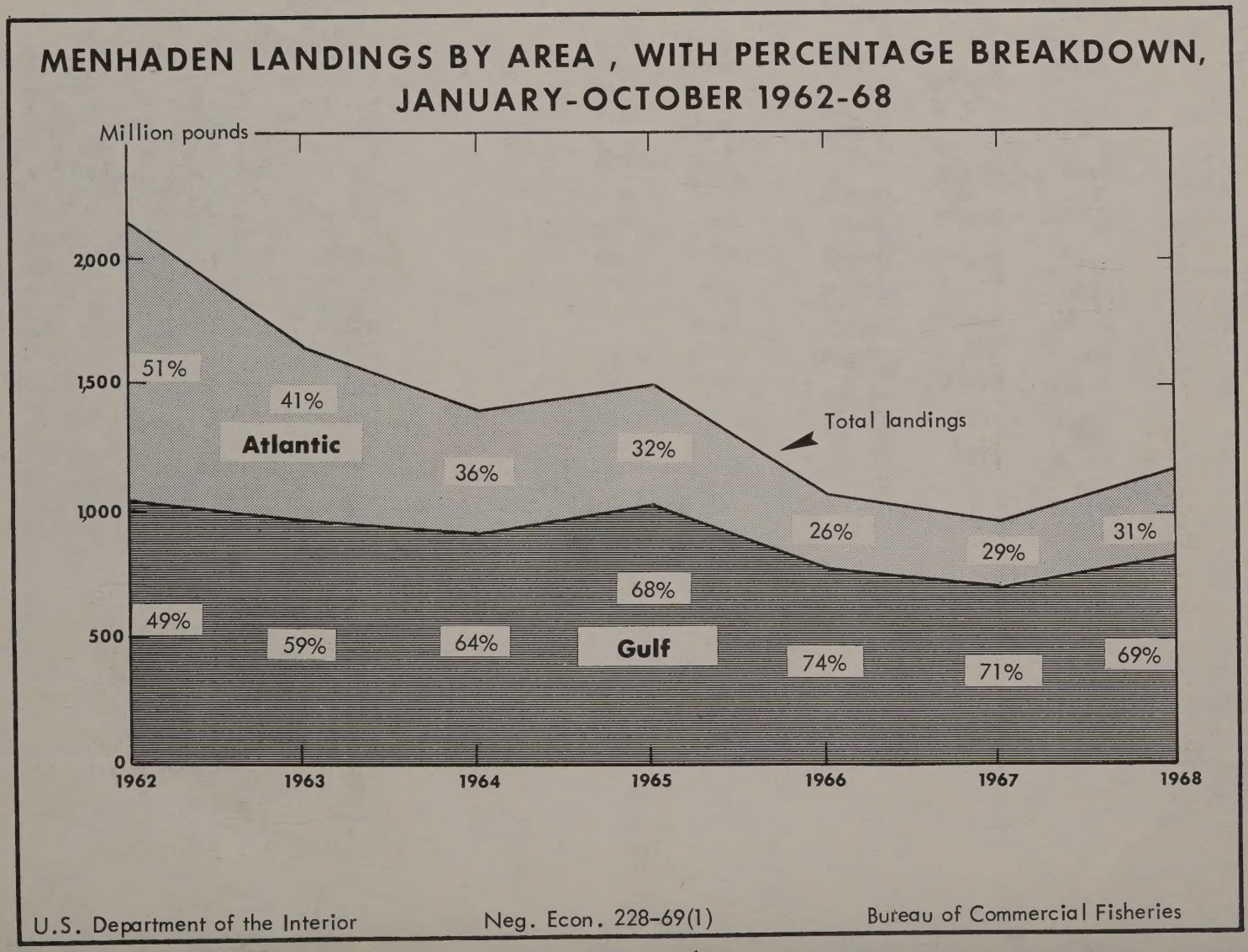
MENHADEN LANDINGS BY AREA , WITH PERCENTAGE BREAKDOWN, JANUARY-OCTOBER 1962-68
Million pounds
2,000
1,500
1,000
500
0
1962
1963
1964
1965
1966
1967
1968
51%
41%
Atlantic
36%
32%
26%
29%
31%
Total landings
49%
59%
64%
68%
Gulf
74%
71%
69%
U.S. Department of the Interior
Neg. Econ. 228-69(1)
Bureau of Commercial Fisheries

Figure 1

# INDUSTRIAL FISHERY PRODUCTS

## Situation and Outlook

Approved by the Bureau of Commercial Fisheries Situation and Outlook Board, January 23, 1969

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## SUMMARY

### FISH MEAL

### Review: January-October 1968

Total supplies of fish meal in the United States (excluding stocks, which were not reported) in January-October 1968, were 865,200 short tons[1]--24 percent more than in 1967 and 51 percent more than the 1963-67 average. U.S. imports of fish meal in the 10-month period were 685,400 tons, or 79 percent of total supplies. Peru supplied 73 percent of imports in January-October 1968--compared to 69 percent in 1967.

[1]Short tons are used in this report unless otherwise specified.

Domestic production of fish meal was an estimated 179,900 tons in the 10-month period. Seventy percent of the fish meal was made from menhaden in 1968--compared to 58 percent in 1967.

World production of fish meal in the first 10 months of 1968 was 3,281,600 metric tons (3,617,300 short tons)--up 15 percent from the same period in 1967. Eighty percent of this meal was made by FEO[2] countries, and 48 percent was made by Peru alone.

FEO countries exported 2,567,000 metric tons (2,829,600 short tons) of fish meal in January-October 1968. Peru shipped 1,644,400 metric tons (1,812,600 short tons) or nearly two-thirds of total FEO exports. Twenty-two percent of FEO exports came to the United States in the first 10 months of 1968, and 28 percent of Peru's exports was sent to the United States in that period.

Total stocks of fish meal held by FEO countries on November 1, 1968, were an estimated 709,600 metric tons (782,200 short tons)--down 10 percent from stocks held on November 1, 1967. Peru held 69 percent of FEO stocks on November 1, 1968--compared to 55 percent on November 1, 1967.

Major factors influencing the use of fish meal in the United States are the number of broiler chicks on feed, the absolute price of fish meal, and the price of fish meal in relation to the price of soybean meal. In the first 10 months of 1968, 2.2 billion broiler chicks were placed in the 22 major broiler-producing States--up about 1 percent from 1967 and up 10 percent from the 1963-67 average.

The average New York price of menhaden meal (60 percent protein) fell from $149.65 per ton, bagged, f.o.b. East Coast and Gulf[3] points in July 1968, to $140.50 in November. The average price of Peruvian fish meal (65 percent protein) fell from $143.20 per ton, f.o.b. East Coast and Gulf ports in July, to $129.20 per ton in October. However, in November, prices of both domestic and Peruvian meal began to rise, and by the end of December were $148 and $139 per ton, respectively. The increase in prices in November and December was apparently due to the anticipation of the longshoremen's strike on December 20.

The average price of soybean meal (50 percent solvent) at Decatur, Ill., rose to $95.50 per ton in September 1968--$14.20 more

[2]Fishmeal Exporters Organization; member countries are Angola, Chile, Iceland, Norway, Peru, South Africa, and South West Africa.
[3]U.S. coast on the Gulf of Mexico.

than at the beginning of the year and the highest price in 2 years. By November, the average price had dropped to $79.40 per ton.

The relation between the price of fish meal and the price of soybean meal favored the use of fish meal during most of the 10-month period in 1968.

## Outlook: January-March 1969

Less than 15,000 tons of fish meal are expected to be produced in January-March 1969. Production of meal from menhaden is normally very light in this period.

Most of United States imports in the first quarter have come from FEO countries. Peru alone provided 62 percent of imports in the first 3 months of 1967 and 80 percent in 1968. In the first quarter of 1969, the FEO countries are expected to continue to be major suppliers of fish meal to the United States.

The amount of meal the FEO countries ship to the United States depends on their total exports and on the relation between the price of fish meal in the United States and the price in Europe. Total exports from Peru and the other FEO countries are not expected to be more than those in the first quarter of 1968. However, if the ratio between the price of Peruvian fish meal at New York and the price at Hamburg, Germany, remains at the December level of 1.15 to 1, then at least 180,000 tons of fish meal could come to the United States from FEO countries in January-March 1969. Total U.S. imports could be at least 200,000 tons.

Of course, the amount of meal actually imported will depend also on developments with respect to production and stocks in the major exporting countries, such as Peru, and on other factors such as the longshoremen's strike.

The Bureau of Commercial Fisheries estimates that at least 210,000 tons of fish meal could be available for use in the United States in the first quarter of 1969. The above figure does not include those stocks which are on hand January 1. It remains to be seen how the longshoremen's strike and a possible closed fishing season in Peru will affect this estimate.

The U.S. Department of Agriculture estimates that about 685 million broiler chicks will be placed on feed in January-March 1969.

These chicks together with other animals consuming fish meal will provide a potential outlet for as much as 250,000 tons of fish meal. However, if the ratio between the price of fish meal and the price of soybean meal remains at the December level of 1.74 to 1 through the first quarter of 1969, then the actual use of fish meal could be reduced to 175,000 to 205,000 tons.

## FISH SOLUBLES

Total supplies of fish solubles (production plus imports) in January-October were 69,400 tons--the same amount that was available in 1967, but down 19 percent from the 1963-67 average. Nearly all (98 percent) of these supplies came from domestic production.

The average price of menhaden solubles in December 1968 was $51.25 per ton, f.o.b. East Coast plants--the lowest price since September 1961, when the average was $49.70 per ton. Even though prices of fish solubles remained competitive with prices of fish meal and other substitutes, the use of fish solubles was very light in 1968.

The Bureau of Commercial Fisheries estimates that total supplies of fish solubles (excluding stocks) will be less than 8,000 tons in January-March 1969, and probably will be nearer 4,000 tons. Between one-eighth and one-fourth of these supplies is expected to come from imports.

Prices of menhaden solubles have declined steadily since December 1966 and averaged about $51 per ton the last 3 months of 1968. These low prices should encourage the use of this product; however, the future use and prices of fish solubles are difficult to foretell at the present time.

## FISH OIL

### Review: January-October 1968

About 153.3 million pounds of fish oil were produced in the United States in January-October 1968--up 49 percent from 1967 but about the same as the 1963-67 average. Eighty-eight percent of the fish oil came from menhaden in 1968--6 percentage points more than in 1967 and the same as the 1963-67 average.

Stocks of fish oil in the United States on November 1, 1968, were 114.1 million pounds--up 37 percent from stocks held at the beginning of the year.

In the first 10 months of 1968, the United States used 26 million pounds of fish oil in the production of paint, varnish, resin, plastics, lubricants, and other industrial products. Fish oil exports for the 10-month period were 41.5 million pounds--43 percent less than exports in 1967. Seventy-three percent of the fish oil exports went to Sweden--compared to 28 percent in 1967.

The average price of menhaden oil in September, November, and December 1968, as quoted at New York City, was 4.40 cents per pound, f.o.b. East Coast plants--the lowest price since December 1962. In December, oil prices increased from an average of 4.40 cents per pound during the middle of the month to 4.60 cents in the last week.

## Outlook: January-March 1969

Domestic production of fish oil is expected to be 1.3 to 2.7 million pounds in the first 3 months of 1969.

Stocks of fish oil on January 1, 1969, are expected to be as high as 130 million pounds. Stocks at the end of the first quarter for the last 4 years have been 50 to 60 million pounds.

The prices of menhaden oil edged up slightly in the latter part of December. This rise in price may indicate an increased demand for fish oil. Current ratios between the price of menhaden oil and the prices of competing industrial oils, such as tall, tung, and linseed, indicate more fish oil should be used in the first quarter of 1969 than in 1968, when consumption was 8.2 million pounds.

# REVIEW: JANUARY-OCTOBER 1968

## FISH MEAL

### Supply

January-October Meal Production--Up Slightly from 1967

The United States produced about 179,900 short tons of fish meal in January-October 1968--up 2 percent from the same period in 1967, but down 10 percent from the 1963-67 average (tables 1 and 2). The months with the highest production were July, with 40,700 tons, and August, with 31,900 tons (table 1).

Table 1.--U.S. production of fish meal by month, 1960-68[1/]

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[2/] |
|---|---|---|---|---|---|---|---|---|---|
| | Thousand short tons | | | | | | | | |
| January | 3.8 | 2.7 | 2.9 | 2.3 | 2.1 | 3.2 | 2.8 | 5.7 | 1.9 |
| February | 3.1 | 2.1 | 3.6 | 2.9 | 2.3 | 2.9 | 2.3 | 3.9 | 2.1 |
| March | 3.1 | 2.8 | 4.2 | 2.7 | 3.1 | 3.8 | 5.7 | 4.9 | 3.9 |
| April | 6.1 | 6.1 | 9.4 | 8.4 | 8.1 | 11.3 | 11.3 | 10.1 | 10.7 |
| May | 19.8 | 34.4 | 40.5 | 40.3 | 32.1 | 25.1 | 20.3 | 17.2 | 16.6 |
| June | 44.3 | 54.4 | 61.2 | 35.3 | 49.0 | 48.6 | 36.9 | 33.5 | 27.3 |
| July | 56.3 | 63.4 | 55.6 | 38.9 | 45.2 | 50.1 | 36.5 | 36.4 | 40.7 |
| August | 51.2 | 57.5 | 40.4 | 43.7 | 33.5 | 42.0 | 31.4 | 33.6 | 31.9 |
| September | 38.5 | 28.8 | 31.7 | 24.7 | 22.8 | 21.1 | 23.2 | 20.3 | 26.0 |
| October | 24.1 | 16.2 | 36.0 | 18.5 | 8.6 | 12.3 | 11.0 | 11.4 | 18.6 |
| November | 10.8 | 10.1 | 10.2 | 13.4 | 10.7 | 12.1 | 18.9 | 15.4 | |
| December | 9.2 | 12.8 | 2.7 | 10.0 | 7.7 | 9.8 | 12.0 | 9.0 | |
| Total[3/] | 270.3 | 291.3 | 298.4 | 241.1 | 225.2 | 242.3 | 212.4 | 201.4 | |

1/ Excludes meal made from shellfish.
2/ Preliminary.
3/ Figures may not add to total because of rounding.

Table 2.--U.S. production of fish meal by raw material source, January-October 1967, 1968, and 1963-67 average

| Source | 1963-67 average | | 1967 | | 1968[1] | |
|---|---|---|---|---|---|---|
| | Thousand short tons | Percent | Thousand short tons | Percent | Thousand short tons | Percent |
| Alewives | 2.4 | 1.2 | 5.1 | 2.9 | [2] | - |
| Groundfish | 7.8 | 3.9 | 4.8 | 2.7 | [2] | - |
| Herring | 9.6 | 4.8 | 8.6 | 4.8 | 11.3 | 6.3 |
| Menhaden[3] | 138.7 | 69.1 | 102.7 | 58.0 | 125.7 | 69.9 |
| Tuna, mackerel, and anchovies | 22.3 | 11.1 | 27.9 | 15.8 | 22.0 | 12.2 |
| Unclassified | 19.8 | 9.9 | 27.9 | 15.8 | 20.8 | 11.6 |
| Total[4] | 200.6 | 100.0 | 177.0 | 100.0 | 179.9 | 100.0 |

[1]Preliminary.
[2]Included in 'unclassified.'
[3]Includes a small quantity of other species.
[4]Figures may not add to total because of rounding.

Menhaden Meal Production--Up 22 Percent from Last Year

Most of the increase in total U.S. fish meal production was due to the increased production of menhaden meal. About 125,700 tons of menhaden meal were produced in January-October 1968--compared to 102,700 tons the year before (tables 2 and 3). Menhaden meal comprised 70 percent of total production in 1968--compared to 58 percent in 1967 (table 2). About 68 percent of the menhaden meal was produced in the Gulf Coast area in the first 10 months--compared to 70 percent in 1967. The rest of the meal--40,600 tons--was produced in the Atlantic Coast area.

Menhaden landings for the Atlantic Coast area in January-October 1968 were 374.5 million pounds, landings for the Gulf Coast area were 822.4 million pounds, and total U.S. menhaden landings were 1,196.8 million pounds (table 4 and figure 1). The average yield for the 10-month period was 21 percent--the same as in 1967. That is, about 1 ton of meal was processed from every 5 tons of menhaden.

About 54,200 tons of meal, or 30 percent of total production, were made from fish other than menhaden in January-October 1968. A variety of fish, including tuna scrap, mackerel, herring, and anchovies, was used to make this meal.

Table 3.--Production of menhaden meal by area and by month, 1960-68[1/]

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[2/] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Thousand short tons | | | | | |
| | | | | Atlantic Coast | | | | | |
| January | 0.3 | 0.5 | 0.2 | - | 0.1 | 0.2 | 0.5 | - | - |
| February | 1/ | - | - | - | - | - | - | - | - |
| March | 1/ | - | - | - | - | - | - | - | - |
| April | 0.7 | 1.2 | 0.7 | 1.1 | 0.9 | 0.6 | 0.2 | 1.1 | 0.7 |
| May | 3.2 | 9.0 | 18.0 | 12.8 | 5.4 | 3.9 | 1.1 | 1.9 | 2.6 |
| June | 19.3 | 26.0 | 30.5 | 12.9 | 12.2 | 12.6 | 4.6 | 6.6 | 7.0 |
| July | 30.2 | 35.9 | 23.2 | 13.5 | 11.7 | 8.8 | 6.0 | 6.0 | 10.5 |
| August | 30.8 | 28.9 | 15.7 | 11.6 | 11.5 | 12.7 | 7.2 | 6.8 | 7.1 |
| September | 18.5 | 17.7 | 12.3 | 9.8 | 7.2 | 7.5 | 5.8 | 3.5 | 4.9 |
| October | 15.8 | 7.8 | 23.8 | 6.1 | 4.4 | 6.5 | 5.7 | 4.5 | 7.8 |
| November | 8.0 | 6.6 | 6.5 | 8.9 | 7.2 | 8.5 | 14.8 | 10.2 | |
| December | 5.9 | 9.4 | 0.3 | 6.3 | 5.0 | 6.1 | 7.1 | 6.2 | |
| Total[3/] | 132.7 | 143.0 | 131.2 | 83.0 | 65.6 | 67.4 | 53.0 | 46.9 | |
| | | | | Gulf Coast | | | | | |
| January | - | - | - | - | - | - | - | - | - |
| February | - | - | - | - | - | - | - | - | - |
| March | - | - | - | - | - | - | 0.1 | - | - |
| April | 0.9 | 2.4 | 3.3 | 4.0 | 2.0 | 6.7 | 3.7 | 3.7 | 3.1 |
| May | 12.2 | 21.1 | 13.9 | 22.0 | 17.3 | 14.9 | 12.9 | 8.4 | 8.9 |
| June | 19.2 | 23.7 | 23.1 | 16.7 | 27.5 | 27.8 | 22.5 | 16.7 | 15.4 |
| July | 20.3 | 21.5 | 25.0 | 18.0 | 22.3 | 30.4 | 18.9 | 18.6 | 21.7 |
| August | 14.3 | 23.0 | 18.0 | 24.4 | 14.5 | 20.7 | 12.4 | 16.4 | 17.7 |
| September | 13.8 | 7.2 | 15.0 | 9.8 | 10.8 | 7.5 | 11.4 | 7.5 | 14.3 |
| October | 4.5 | 5.4 | 9.4 | 6.3 | 0.3 | 0.6 | - | 0.9 | 4.0 |
| November | 0.4 | 0.2 | 0.8 | 1/ | - | - | - | - | |
| December | - | - | - | - | - | - | - | - | |
| Total[3/] | 85.6 | 104.5 | 108.5 | 101.2 | 94.7 | 108.6 | 81.9 | 72.2 | |
| | | | | Total[3/] | | | | | |
| January | 0.3 | 0.5 | 0.2 | - | 0.1 | 0.2 | 0.5 | - | - |
| February | 1/ | - | - | - | - | - | - | - | - |
| March | 1/ | - | - | - | - | - | 0.1 | - | - |
| April | 1.6 | 3.6 | 4.0 | 5.1 | 2.9 | 7.3 | 3.8 | 4.8 | 3.8 |
| May | 15.4 | 30.1 | 31.9 | 34.8 | 22.7 | 18.8 | 14.0 | 10.3 | 11.5 |
| June | 38.5 | 49.7 | 53.6 | 29.6 | 39.7 | 40.4 | 27.1 | 23.3 | 22.3 |
| July | 50.5 | 57.4 | 48.2 | 31.5 | 34.0 | 39.2 | 24.9 | 24.7 | 32.2 |
| August | 45.1 | 51.9 | 33.7 | 36.0 | 26.0 | 33.4 | 19.7 | 23.2 | 24.8 |
| September | 32.3 | 24.9 | 27.3 | 19.6 | 18.0 | 15.0 | 17.2 | 11.0 | 19.2 |
| October | 20.3 | 13.2 | 33.2 | 12.4 | 4.7 | 7.1 | 5.7 | 5.4 | 11.8 |
| November | 8.4 | 6.8 | 7.3 | 8.9 | 7.2 | 8.5 | 14.8 | 10.2 | |
| December | 5.9 | 9.4 | 0.3 | 6.3 | 5.0 | 6.1 | 7.1 | 6.2 | |
| Total[3/] | 218.3 | 247.5 | 239.7 | 184.2 | 160.3 | 176.0 | 135.0 | 119.1 | |

[1/] Includes a small amount of meal from other species.

[2/] Preliminary.

[3/] Figures may not add to total because of rounding.

Table 4.--Menhaden landings by area, January-October 1967, 1968, and 1963-67 average

| Area | 1963-67 average | | 1967 | | 1968[1] | |
|---|---|---|---|---|---|---|
| | Million pounds | Percent | Million pounds | Percent | Million pounds | Percent |
| Middle Atlantic | 137.1 | 10.4 | 38.2 | 3.9 | 74.0 | 6.2 |
| Chesapeake | 228.2 | 17.2 | 161.8 | 16.5 | 226.1 | 18.9 |
| South Atlantic | 80.2 | 6.1 | 79.3 | 8.1 | 74.4 | 6.2 |
| Total Atlantic[2] | 445.5 | 33.7 | 279.4 | 28.5 | 374.5 | 31.3 |
| Gulf Coast | 877.2 | 66.3 | 700.0 | 71.5 | 822.4 | 68.7 |
| Total U.S.[2] | 1,322.7 | 100.0 | 979.3 | 100.0 | 1,196.8 | 100.0 |

[1]Preliminary.
[2]Figures may not add to total because of rounding.

Table 5.--Menhaden landings and average annual exvessel price of menhaden, 1939-68

| Year | Landings | Price | Year | Landings | Price |
|---|---|---|---|---|---|
| | Million pounds | Cents per lb. | | Million pounds | Cents per lb. |
| 1939 | 574.8 | 0.4 | 1954 | 1,740.6 | 1.4 |
| 1940 | 634.6 | 0.4 | 1955 | 1,848.3 | 1.3 |
| 1941 | 775.1 | 0.5 | 1956 | 2,076.6 | 1.4 |
| 1942 | 482.6 | 0.6 | 1957 | 1,681.6 | 1.3 |
| 1943 | 615.6 | 0.6 | 1958 | 1,544.7 | 1.4 |
| 1944 | 686.0 | 0.5 | 1959 | 2,193.9 | 1.2 |
| 1945 | 759.1 | 0.8 | 1960 | 1,999.0 | 1.0 |
| 1946 | 916.0 | 0.9 | 1961 | 2,290.0 | 1.1 |
| 1947 | 948.2 | 1.1 | 1962 | 2,227.3 | 1.1 |
| 1948 | 1,008.0 | 1.1 | 1963 | 1,787.6 | 1.2 |
| 1949 | 1,072.6 | 1.0 | 1964 | 1,530.6 | 1.4 |
| 1950 | 1,000.5 | 1.0 | 1965 | 1,651.0 | 1.6 |
| 1951 | 1,103.9 | 1.2 | 1966 | 1,275.6 | 1.6 |
| 1952 | 1,386.3 | 1.0 | 1967 | 1,133.2 | 1.3 |
| 1953 | 1,683.4 | 1.0 | 1968[1] | 1,339.7 | 1.4 |

[1]Estimated.

## January-October Imports--Up 32 Percent from 1967

The United States imported 685,400 tons of fish meal during January-October 1968--up 32 percent from the same period in 1967 and up 84 percent from the 1963-67 average (tables 6 and 7). More meal was imported the first 10 months of 1968 than in all of 1967, when imports totaled 651,500 tons. These heavy imports were due mainly to higher fish meal prices in the United States than in Europe in the 10-month period, and to a relation between the price of fish meal and the price of soybean meal that favored the use of fish meal. These factors are discussed more fully in the following sections on FEO exports and fish meal demand.

Peru continues to be the leading supplier of fish meal. United States imports from Peru during January-October 1968 were 501,600 tons or 73 percent of total imports (table 7 and figure 2). Imports from Peru in the first 10 months of 1968 were 39 percent more than in 1967, and 85 percent more than the 1963-67 average. Imports from Chile in January-October were 85,300 tons--compared to only 30,900 tons in 1967. Canada sent 54,500 tons of fish meal to the United States in the 10-month period--32 percent more than in 1967.

Table 6.--U.S. imports of fish meal by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[1/] |
|---|---|---|---|---|---|---|---|---|---|
| | Thousand short tons | | | | | | | | |
| January | 8.6 | 9.5 | 25.4 | 18.5 | 31.0 | 16.0 | 15.3 | 42.0 | 90.9 |
| February | 8.1 | 14.3 | 18.8 | 40.1 | 35.3 | 25.5 | 25.2 | 44.4 | 49.0 |
| March | 18.7 | 20.5 | 18.5 | 40.5 | 40.1 | 53.7 | 33.6 | 74.1 | 54.7 |
| April | 10.4 | 19.1 | 26.4 | 26.6 | 56.0 | 39.7 | 39.5 | 50.0 | 62.3 |
| May | 9.5 | 25.1 | 25.3 | 31.1 | 59.5 | 30.5 | 35.0 | 39.0 | 70.4 |
| June | 11.2 | 19.3 | 26.5 | 18.5 | 34.5 | 44.5 | 45.6 | 40.6 | 80.9 |
| July | 13.1 | 18.7 | 25.9 | 43.2 | 28.9 | 18.7 | 49.0 | 47.6 | 91.7 |
| August | 8.3 | 19.0 | 28.3 | 44.0 | 36.5 | 13.9 | 59.4 | 74.8 | 87.4 |
| September | 9.5 | 13.9 | 13.7 | 35.3 | 34.1 | 6.8 | 43.3 | 55.7 | 49.3 |
| October | 12.5 | 9.4 | 12.7 | 31.4 | 19.7 | 4.8 | 35.4 | 50.1 | 48.8 |
| November | 6.1 | 25.6 | 11.9 | 17.4 | 25.7 | 5.7 | 35.7 | 63.0 | |
| December | 15.6 | 23.3 | 19.0 | 29.7 | 37.8 | 11.0 | 30.8 | 70.2 | |
| Total[2/] | 131.6 | 217.8 | 252.3 | 376.3 | 439.1 | 270.7 | 447.8 | 651.5 | |

[1/] Preliminary.

[2/] Figures may not add to total because of rounding.

Table 7.--U.S. imports of fish meal by country of origin, January-October 1967, 1968, and 1963-67 average

| Country of origin | 1963-67 average | | 1967 | | 1968 | |
|---|---|---|---|---|---|---|
| | Thousand short tons | Percent | Thousand short tons | Percent | Thousand short tons | Percent |
| Canada | 41.5 | 11.2 | 41.3 | 8.0 | 54.5 | 8.0 |
| Chile | 28.1 | 7.6 | 30.9 | 6.0 | 85.3 | 12.4 |
| Norway | 20.2 | 5.4 | 80.2 | 15.5 | 33.1 | 4.8 |
| Peru | 271.0 | 72.9 | 359.7 | 69.4 | 501.6 | 73.2 |
| South Africa and South West Africa | 6.1 | 1.6 | - | - | - | - |
| Other | 4.7 | 1.3 | 6.0 | 1.1 | 10.8 | 1.6 |
| Total[1] | 371.7 | 100.0 | 518.2 | 100.0 | 685.4 | 100.0 |

[1]Figures may not add to total because of rounding.

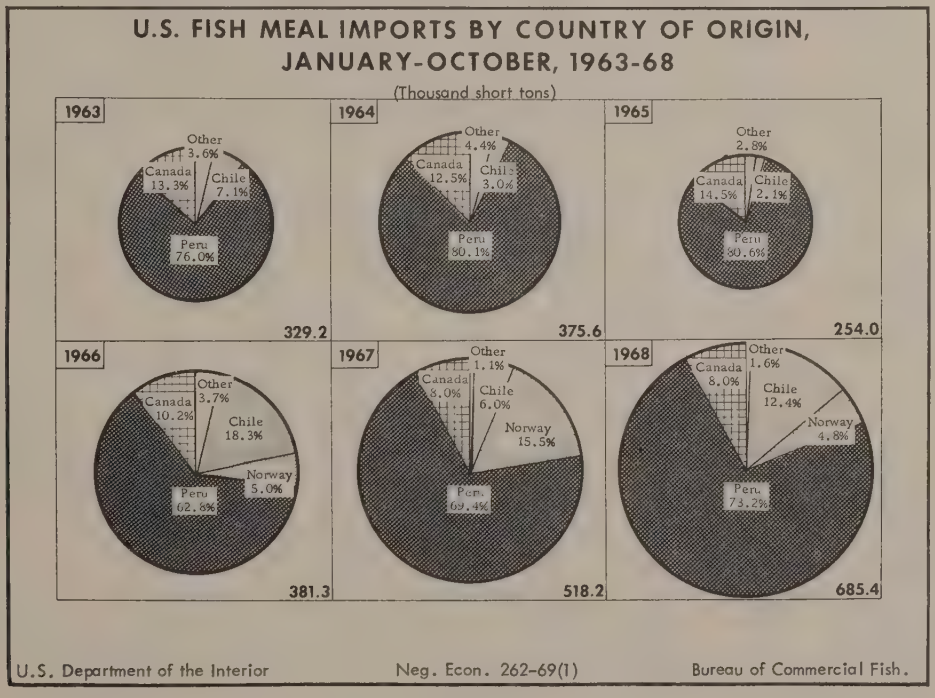



Figure 2

Imports from Norway continued to be low. No meal was shipped to the United States from that country in October. Total imports of fish meal from Norway in January-October were 33,100 tons--nearly 60 percent less than imports in 1967 but 64 percent more than the 1963-67 average.

## Total Fish Meal Available First 10 Months--Well Above Average

The total amount of fish meal available for use in the United States (excluding stocks, which are not reported) during January-October was 865,200 tons--24 percent more than the amount available in the same period in 1967 and over 1-½ times the 1963-67 average (table 8 and figure 3). The amount of meal available in the first 10 months of 1968 was 1 percent more than the amount available in all of 1967. Imports accounted for 79 percent of total supplies during January-October 1968--compared to 74 percent in 1967 and an average of 65 percent in 1963-67 (table 9).

Table 8.--Total fish meal available in the United States: production plus imports, by month, 1960-68[1/]

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[2/] |
|---|---|---|---|---|---|---|---|---|---|
| | Thousand short tons | | | | | | | | |
| January | 12.4 | 12.2 | 28.3 | 20.8 | 33.1 | 19.2 | 18.1 | 47.7 | 92.8 |
| February | 11.2 | 16.4 | 22.4 | 43.0 | 37.6 | 28.4 | 27.5 | 48.3 | 51.1 |
| March | 21.8 | 23.3 | 22.7 | 43.2 | 43.2 | 57.5 | 39.2 | 79.1 | 58.5 |
| April | 16.5 | 25.2 | 35.8 | 35.0 | 64.1 | 51.0 | 50.8 | 60.0 | 73.0 |
| May | 29.3 | 59.6 | 65.8 | 71.4 | 91.6 | 55.6 | 55.3 | 56.2 | 87.0 |
| June | 55.5 | 73.7 | 87.6 | 53.8 | 83.5 | 93.1 | 82.6 | 74.1 | 108.2 |
| July | 69.4 | 82.1 | 81.5 | 82.1 | 74.1 | 68.8 | 85.5 | 84.0 | 132.5 |
| August | 59.5 | 76.6 | 68.7 | 87.7 | 70.0 | 55.8 | 90.8 | 108.4 | 119.2 |
| September | 48.0 | 42.7 | 45.4 | 60.0 | 56.9 | 27.9 | 66.5 | 76.0 | 75.4 |
| October | 36.6 | 25.6 | 48.7 | 49.9 | 28.3 | 17.1 | 46.4 | 61.5 | 67.4 |
| November | 16.9 | 35.7 | 22.1 | 30.8 | 36.4 | 17.8 | 54.7 | 78.4 | |
| December | 24.8 | 36.1 | 21.7 | 39.7 | 45.5 | 21.0 | 42.8 | 79.2 | |
| Total[3/] | 401.9 | 509.1 | 550.7 | 617.4 | 664.3 | 513.0 | 660.2 | 852.9 | |

[1/] Excludes meal made from shellfish.

[2/] Preliminary.

[3/] Figures may not add to total because of rounding.

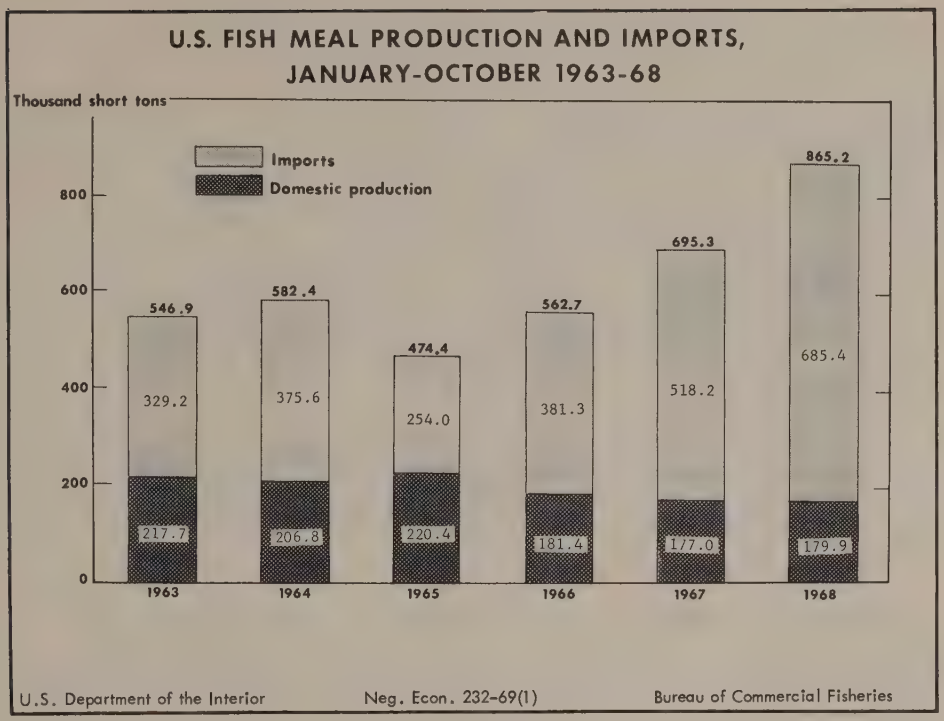



Figure 3

Table 9.--U.S. imports of fish meal as a percent of total fish meal[1/] available in the United States, by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|---|---|
| | Percent | | | | | | | | |
| January | 69.4 | 77.9 | 89.8 | 88.9 | 93.6 | 83.3 | 84.5 | 88.0 | 98.0 |
| February | 72.3 | 87.2 | 83.9 | 93.2 | 93.9 | 89.8 | 91.6 | 91.9 | 95.9 |
| March | 85.8 | 88.0 | 81.5 | 93.8 | 92.8 | 93.4 | 85.7 | 93.7 | 93.5 |
| April | 63.0 | 75.8 | 73.7 | 76.0 | 87.4 | 77.8 | 77.8 | 83.3 | 85.3 |
| May | 32.4 | 42.1 | 38.4 | 43.6 | 65.0 | 54.8 | 63.3 | 69.4 | 80.9 |
| June | 20.2 | 26.2 | 30.2 | 34.4 | 41.3 | 47.8 | 55.2 | 54.8 | 74.8 |
| July | 18.9 | 22.8 | 31.8 | 52.6 | 39.0 | 27.2 | 57.3 | 56.7 | 69.2 |
| August | 13.9 | 24.8 | 41.2 | 50.2 | 52.1 | 24.9 | 65.4 | 69.0 | 73.3 |
| September | 19.8 | 32.6 | 30.2 | 58.8 | 59.9 | 24.4 | 65.1 | 73.3 | 65.4 |
| October | 34.2 | 36.7 | 26.1 | 62.9 | 69.6 | 28.1 | 76.3 | 81.5 | 72.3 |
| November | 36.1 | 71.7 | 53.8 | 56.5 | 70.6 | 32.0 | 65.3 | 80.4 | |
| December | 62.9 | 64.5 | 87.6 | 74.8 | 83.1 | 52.4 | 72.0 | 88.6 | |
| Average[2/] | 32.7 | 42.8 | 45.8 | 60.9 | 66.1 | 52.8 | 67.8 | 76.4 | |

1/ Production and imports.
2/ Weighted average.

## World Fish Meal Production in January-October--Up 15 Percent over 1967

World production of fish meal in the first 10 months of 1968 was 3,281,600 metric tons (3,617,300 short tons)--up 15 percent from the same period in 1967 and up 17 percent from 1966 (table 10). The above production does not include Japan and the U.S.S.R., because monthly figures are not available for these countries. Japan has produced 8 to 10 percent of world fish meal over the last few years.

Peru made 48 percent of the world's fish meal in January-October 1968. South Africa and South West Africa made 13 percent, and Norway 11 percent. FEO countries produced 80 percent of world meal in 1968 and 82 percent in 1967.

## FEO Production during First 10 Months--Up 12 Percent from 1967

FEO countries produced 2,628,600 metric tons (2,897,500 short tons) of fish meal in January-October 1968--compared to 2,356,600 metric tons (2,597,700 short tons) in 1967, and 2,308,700 metric tons (2,544,900 short tons) in 1966 (table 10).

Peru made 1,571,700 metric tons (1,732,500 short tons) in January-October 1968 or 60 percent of all the meal made by FEO countries (table 10). Peru produced 20 percent more meal in 1968 than in 1967, and 23 percent more than in 1966.

South Africa and South West Africa made 17 percent of the fish meal manufactured by FEO countries in January-October 1968--compared to 14 percent in 1967. Norway was the second highest producer of fish meal in January-October 1966 and 1967, but dropped to third place in 1968--producing 14 percent of the meal in that year (table 10).

Table 10.--FEO[1] and total world production of fish meal, January-October 1966, 1967, and 1968

| Country | 1966 | | 1967 | | 1968[2] | |
|---|---|---|---|---|---|---|
| | Thousand metric tons | Percent | Thousand metric tons | Percent | Thousand metric tons | Percent |
| Angola | 43.7 | 1.9 | 38.0 | 1.6 | 37.4[3] | 1.4 |
| Chile | 188.2 | 8.2 | 111.5 | 4.7 | 168.2 | 6.4 |
| Iceland | 142.8 | 6.2 | 107.1 | 4.5 | 50.4 | 1.9 |
| Norway | 401.1 | 17.4 | 445.5 | 18.9 | 361.5 | 13.8 |
| Peru | 1,280.8 | 55.4 | 1,315.0 | 55.8 | 1,571.7 | 59.8 |
| South Africa and South West Africa | 252.1 | 10.9 | 339.5 | 14.4 | 439.4 | 16.7 |
| Total FEO[4] | 2,308.7 | 100.0 | 2,356.6 | 100.0 | 2,628.6 | 100.0 |
| Total world[5] | 2,807.9 | | 2,859.7 | | 3,281.6 | |
| Percent FEO is of world | 82.2 | | 82.4 | | 80.1 | |

[1]Fishmeal Exporters Organization; members are those countries listed in the table.
[2]Preliminary.
[3]Estimated.
[4]Figures may not add to total because of rounding.
[5]FEO countries plus Belgium, Canada, Denmark, France, Sweden, the United Kingdom, the United States, and West Germany. Includes Morocco and Spain, January-June 1968. Does not include Japan and the U.S.S.R.

FEO Exports--Up 23 Percent from 1967

FEO member countries exported 2,567,000 metric tons (2,829,600 short tons) in January-October 1968--compared to 2,090,400 metric tons (2,304,200 short tons) in 1967 (tables 11 and 12). Peru accounted for 64 percent of total FEO exports in the first 10 months of 1968 and 59 percent in 1967. Peru shipped 1,644,400 metric tons (1,812,600 short tons) of fish meal in January-October 1968--one-third more than in 1967. Fourteen percent of FEO exports were from Norway, and 12 percent were from South Africa and South West Africa.

Table 11.--Total FEO[1] exports of fish meal, and FEO exports to the United States, by month, 1966, 1967, and 1968

| Month | 1966 | | | 1967 | | | 1968[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total FEO exports | FEO exports to the United States[3] | | Total FEO exports | FEO exports to the United States[3] | | Total FEO exports | FEO exports to the United States[3] | |
| | Thousand metric tons | Thousand metric tons | Percent | Thousand metric tons | Thousand metric tons | Percent | Thousand metric tons | Thousand metric tons | Percent |
| January | 198.2 | 8.0 | 4.0 | 180.3 | 34.2 | 19.0 | 279.5 | 79.1 | 28.3 |
| February | 173.7 | 19.3 | 11.1 | 203.5 | 36.0 | 17.7 | 283.8 | 39.9 | 14.0 |
| March | 208.8 | 26.3 | 12.6 | 190.6 | 62.2 | 32.6 | 260.9 | 44.7 | 17.1 |
| April | 181.4 | 32.6 | 18.0 | 198.5 | 41.5 | 20.9 | 259.8 | 52.8 | 20.3 |
| May | 165.3 | 27.6 | 16.7 | 231.1 | 31.6 | 13.7 | 246.4 | 56.7 | 23.0 |
| June | 184.9 | 37.6 | 20.3 | 234.1 | 33.6 | 14.4 | 277.8 | 68.7 | 24.7 |
| July | 191.4 | 39.5 | 20.6 | 214.0 | 39.2 | 18.3 | 277.5 | 77.0 | 27.7 |
| August | 164.2 | 48.6 | 29.6 | 224.2 | 63.1 | 28.1 | 198.0[4] | 71.0 | 35.8 |
| September | 156.2 | 35.7 | 22.8 | 194.9 | 45.3 | 23.2 | 231.0[4] | 37.0 | 16.0 |
| October | 156.5 | 28.5 | 18.2 | 219.1 | 40.4 | 18.4 | 252.0[4] | 35.5 | 14.1 |
| November | 141.3 | 30.0 | 21.2 | 247.9 | 52.9 | 21.3 | | | |
| December | 226.8 | 23.9 | 10.5 | 280.1 | 61.3 | 21.9 | | | |
| Total[5] | 2,148.7 | 357.7 | 16.6 | 2,618.4 | 541.3 | 20.7 | | | |

[1]Fishmeal Exporters Organization; members are those countries listed in table 10.
[2]Preliminary.
[3]Based on imports of fish meal from FEO countries as reported by the U.S. Department of Commerce, Bureau of the Census.
[4]Estimated.
[5]Figures may not add to total because of rounding.

Table 12.--FEO[1] exports of fish meal, and FEO exports to the United States, by member country, January-October 1966, 1967, and 1968

| Country | 1966 | | | 1967 | | | 1968[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total exports | FEO exports to the United States[3] | | Total exports | FEO exports to the United States[3] | | Total exports | FEO exports to the United States[3] | |
| | Thousand metric tons | Thousand metric tons | Percent | Thousand metric tons | Thousand metric tons | Percent | Thousand metric tons | Thousand metric tons | Percent |
| Angola | 43.7 | 0.5 | 1.1 | 33.0 | - | - | 38.3[4] | - | - |
| Chile | 170.6 | 63.4 | 37.2 | 91.9 | 28.0 | 30.5 | 146.8 | 77.4 | 52.7 |
| Iceland | 130.9 | - | - | 118.7 | - | - | 58.0[4] | - | - |
| Norway | 196.4 | 17.2 | 8.8 | 377.7 | 72.8 | 19.3 | 365.9 | 30.0 | 8.2 |
| Peru | 1,106.2 | 217.1 | 19.6 | 1,232.9 | 326.4 | 26.5 | 1,644.4 | 455.0 | 27.7 |
| South Africa and South West Africa | 132.8 | 5.5 | 4.1 | 236.1 | - | - | 313.6 | - | - |
| Total[5] | 1,780.6 | 303.7 | 17.0 | 2,090.4 | 427.2 | 20.4 | 2,567.0 | 562.4 | 21.9 |

[1]Fishmeal Exporters Organization; members are those countries listed in the table.
[2]Preliminary.
[3]Based on U.S. imports of fish meal from FEO countries as reported by the U.S. Department of Commerce, Bureau of the Census.
[4]Estimated.
[5]Figures may not add to total because of rounding.

Through October of 1968, 22 percent of FEO exports came to the United States--compared to 20 percent in 1967 and 17 percent in 1966 (table 12). Twenty-eight percent of Peru's exports came to the United States--compared to 26 percent in 1967. Chile shipped 53 percent of her exports to the United States in January-October 1968--compared to 30 percent in 1967. Norway shipped 8 percent of her exports in the first 10 months of 1968--compared to 19 percent in 1967. Norway's exports to the United States in January-October 1968 were two-fifths of what they were in 1967.

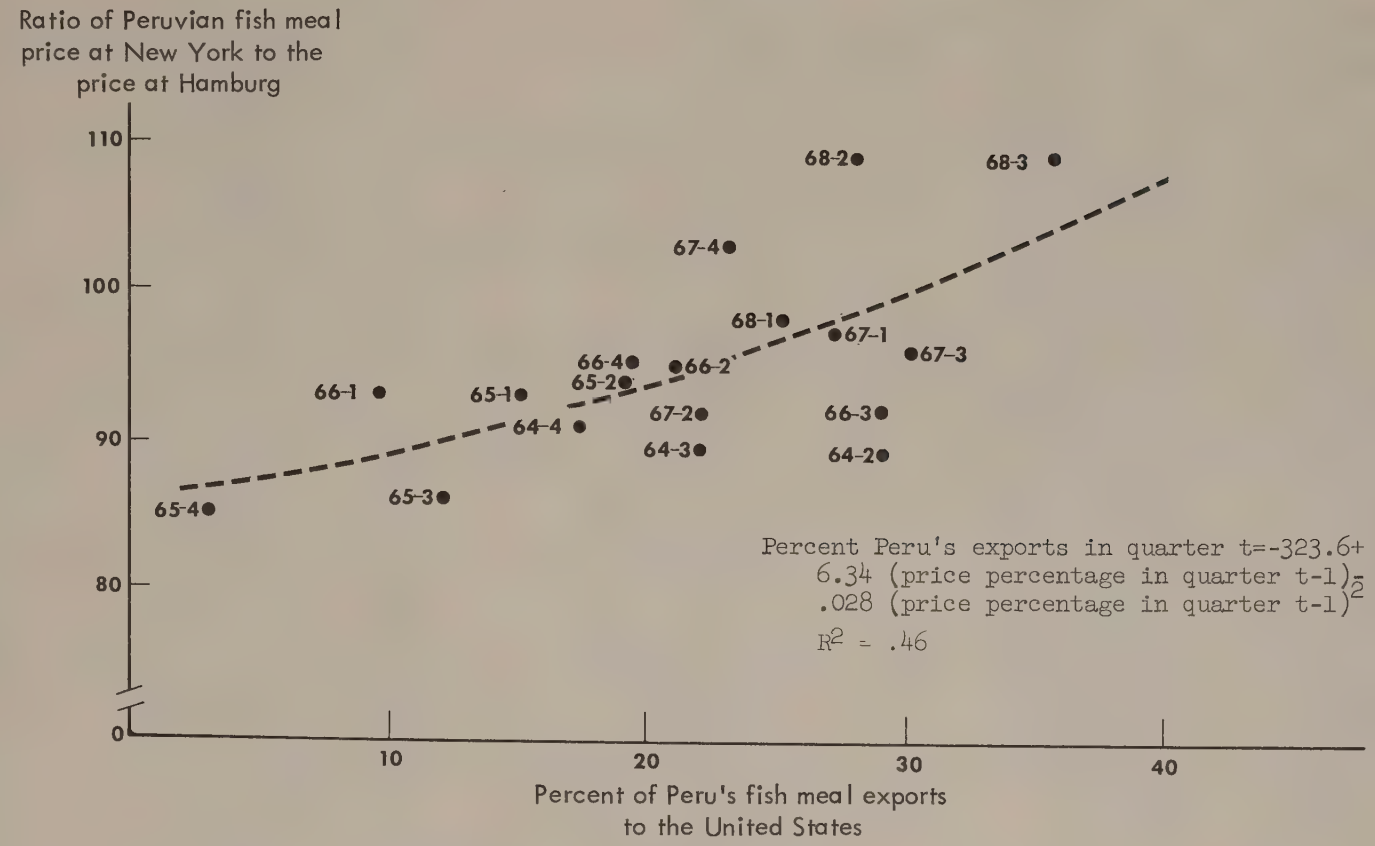
A major factor determining the amount of fish meal that is exported to the United States from Peru and some of the other FEO countries is the relation between the price of fish meal in the United States and the price in Europe. The relation between the percent of Peru's fish meal exports to the United States and the ratio of the price of Peruvian fish meal at New York to the price at Hamburg, Germany is presented in figure 4. This chart shows that, as the average quarterly price of fish meal at New York becomes relatively greater than the price at Hamburg, a greater percent of Peru's exports come to the United States in the next quarter.

Notice that in the second and third quarters of 1968, when a relatively high percent of Peru's exports were to the United States, the price of fish meal at New York was higher than at Hamburg (the ratio was greater than 100) in the preceding quarter. On the other hand, in the fourth quarter of 1965 when only 3 percent of Peru's exports came to the United States, the price at New York was 85 percent of the price at Hamburg in the preceding quarter.

## FEO Stocks on November 1, 1968--Lower Than 1966 or 1967

Total stocks of fish meal held be FEO countries on November 1, 1968, were 709,600 metric tons (782,200 short tons)--compared to 792,200 metric tons (873,200 short tons) on November 1, 1967, and 774,900 metric tons (854,200 short tons) on November 1, 1966 (table 13). Even though stocks held by FEO countries at the beginning of 1968 were 25 percent more than stocks on January 1, 1967, and production by FEO countries was 12 percent greater than in 1967, stocks were lower on November 1, because exports were 23 percent heavier in the first 10 months.

**RELATION BETWEEN PERU'S FISH MEAL EXPORTS TO THE UNITED STATES AND THE RATIO OF PERUVIAN FISH MEAL PRICE AT NEW YORK CITY TO THE PRICE AT HAMBURG, GERMANY, BY QUARTER, 1964-68**




U.S. Department of the Interior Neg. Econ. 263-69(1) Bureau of Commercial Fisheries

Figure 4

Peru held 487,100 metric tons (536,900 short tons) or 69 percent of total FEO stocks on November 1, 1968 (table 13). On November 1, 1967, Peru held 433,700 metric tons (478,100 short tons) or 55 percent of total FEO stocks. Peru's stocks on November 1, 1968 were 12 percent greater than stocks on November 1, 1967, and 25 percent greater than stocks on November 1, 1966.

Table 13.--FEO[1] fish meal stocks held November 1, 1966, 1967, and 1968

| Country | 1966 | | 1967 | | 1968[2] | |
|---|---|---|---|---|---|---|
| | Thousand metric tons | Percent | Thousand metric tons | Percent | Thousand metric tons | Percent |
| Angola | 1.9 | 0.2 | 6.5 | 0.8 | 5.5[3] | 0.8 |
| Chile | 27.0 | 3.5 | 20.1 | 2.5 | 30.9 | 4.4 |
| Iceland | 46.6 | 6.0 | 28.4 | 3.6 | 2.3[3] | 0.3 |
| Norway | 226.2 | 29.2 | 213.7 | 27.0 | 111.6 | 15.7 |
| Peru | 390.5 | 50.4 | 433.7 | 54.7 | 487.1 | 68.6 |
| South Africa and South West Africa | 82.8 | 10.7 | 89.9 | 11.4 | 72.2 | 10.2 |
| Total[4] | 774.9 | 100.0 | 792.2 | 100.0 | 709.6 | 100.0 |

[1]Fishmeal Exporters Organization; members are those countries listed in the table.
[2]Preliminary.
[3]Estimated.
[4]Figures may not add to total because of rounding.

## Demand

### Broiler Chick Placements--Up Slightly from Last Year

Mixed feed for broiler chicks is the major outlet for fish meal in this country. Therefore, the number of broiler chicks placed on feed during a given period of time is one of the factors that provide an indication of the demand for fish meal. During the first 10 months of 1968, 2.2 billion broiler chicks were placed in the 22 major broiler-producing States--up about 1 percent from 1967 and up 10 percent from the 1963-67 average (table 14). A record number of

chicks were placed in June 1968--275.6 million. The previous record month was April 1967, when 272.9 million chicks were placed. November placements were 30 percent greater in 1968 than the year before--apparently due to an anticipated increase in the price of broilers.

## November Broiler Price--At First-of-Year Level

An indication of the demand for broilers is the average price paid for those broilers. In November 1968, the average price of broilers was 13.6 cents per pound--about the same as in January (table 14). In July 1968, the average price of broilers was 15.5 cents per pound--the highest since August 1966. After July, the average price fell steadily to 12.8 cents in October and then rose to 13.6 cents in November.

Table 14.--Broiler chick placements in 22 States, and average broiler prices at the farm by month, 1965-68

| Month | 1965 | | 1966 | | 1967 | | 1968 1/ | |
|---|---|---|---|---|---|---|---|---|
| | Chicks placed | Broiler price | Chicks placed | Broiler price | Chicks placed | Broiler price | Chicks placed | Broiler price |
| | Million | Cents/lb. | Million | Cents/lb. | Million | Cents/lb. | Million | Cents/lb. |
| January | 204.8 | 14.6 | 191.6 | 16.3 | 192.0 | 13.9 | 195.9 | 13.5 |
| February | 179.2 | 15.1 | 199.0 | 16.4 | 204.1 | 15.4 | 199.4 | 14.6 |
| March | 185.2 | 15.6 | 201.3 | 17.2 | 217.6 | 14.3 | 261.1 | 14.6 |
| April | 244.7 | 15.0 | 269.6 | 15.8 | 272.9 | 13.8 | 216.2 | 14.2 |
| May | 202.4 | 15.4 | 217.8 | 16.7 | 217.6 | 13.3 | 219.8 | 14.6 |
| June | 201.0 | 15.7 | 216.6 | 16.1 | 214.8 | 13.5 | 275.6 | 15.0 |
| July | 240.9 | 15.5 | 262.0 | 16.1 | 259.7 | 14.7 | 210.2 | 15.5 |
| August | 179.1 | 15.2 | 192.6 | 15.7 | 199.9 | 12.9 | 249.9 | 14.8 |
| September | 166.7 | 14.5 | 187.0 | 14.6 | 224.7 | 12.6 | 179.0 | 14.1 |
| October | 209.3 | 14.2 | 235.3 | 13.2 | 175.0 | 12.2 | 185.4 | 12.8 |
| November | 175.2 | 14.6 | 188.8 | 13.5 | 185.7 | 11.5 | 242.0 | 13.6 |
| December | 180.3 | 14.6 | 232.7 | 12.0 | 230.8 | 11.6 | | |
| Total placements 2/ and average price 3/ | 2,368.8 | 15.0 | 2,594.4 | 15.3 | 2,594.8 | 13.4 | | |

1/ Preliminary.

2/ Figures may not add to total because of rounding.

3/ Weighted average.

Sources: Commercial Broilers: Annual Production and Weekly Placements, U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.

Soybean Meal Price in January-October--Rises Then Falls

Soybean meal is a major competitor of fish meal in the protein feed market. The average price of soybean meal (50 percent solvent) at Decatur, Ill., rose to $95.50 per ton in September 1968--$14.20 more than at the beginning of the year, and the highest price in 2 years (table 15). In October, the average price was $85.30 per ton and by November had dropped to $79.40 per ton.

The relation between the price of fish meal and the price of soybean meal favored the use of fish meal during most of the 10-month period in 1968 (table 16).

Table 15.--Average monthly price of soybean meal[1/] at Decatur, Ill., 1962-68

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|
| | Dollars per short ton | | | | | | |
| January | 64.60 | 76.70 | 85.40 | 75.40 | 85.00 | 89.30 | 81.30 |
| February | 62.20 | 76.90 | 82.60 | 77.20 | 86.20 | 85.20 | 80.20 |
| March | 65.50 | 76.00 | 82.30 | 76.10 | 80.00 | 83.70 | 80.40 |
| April | 68.30 | 74.10 | 80.00 | 78.40 | 82.40 | 80.70 | 80.90 |
| May | 70.90 | 73.90 | 74.20 | 77.70 | 89.00 | 80.10 | 81.90 |
| June | 73.10 | 76.10 | 73.20 | 85.10 | 101.00 | 87.20 | 89.10 |
| July | 75.90 | 79.00 | 72.90 | 86.00 | 104.10 | 85.00 | 92.00 |
| August | 76.60 | 82.40 | 71.00 | 80.50 | 106.10 | 86.90 | 94.50 |
| September | 87.30 | 82.60 | 77.10 | 89.20 | 97.90 | 87.60 | 95.50 |
| October | 76.10 | 80.00 | 76.80 | 80.80 | 91.50 | 78.20 | 85.30 |
| November | 76.20 | 81.50 | 72.70 | 84.50 | 86.40 | 78.10 | 79.40 |
| December | 75.80 | 84.10 | 75.50 | 78.30 | 92.70 | 79.40 | 79.40 |
| Average[2/] | 72.70 | 78.60 | 77.00 | 80.75 | 91.85 | 83.45 | 85.00 |

1/ 50 percent protein, bulk.
2/ Simple average.

Source: Feed Market News, U.S. Department of Agriculture, Consumer and Marketing Service, Grain Division.

Table 16.--Ratio of Peruvian fish meal price[1/] to soybean meal price[2/]

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|---|---|
| January | 1.67 | 1.50 | 1.78 | 1.67 | 1.56 | 1.88 | 2.04 | 1.66 | 1.48 |
| February | 1.70 | 1.36 | 1.96 | 1.60 | 1.61 | 1.88 | 1.98 | 1.64 | 1.48 |
| March | 1.70 | 1.41 | 1.91 | 1.60 | 1.61 | 1.88 | 2.07 | 1.61 | 1.44 |
| April | 1.68 | 1.26 | 1.91 | 1.60 | 1.58 | 1.89 | 1.86 | 1.62 | 1.42 |
| May | 1.72 | 1.45 | 1.80 | 1.61 | 1.70 | 1.98 | 1.75 | 1.59 | 1.61 |
| June | 1.65 | 1.63 | 1.64 | 1.55 | 1.72 | 1.96 | 1.54 | 1.50 | 1.57 |
| July | 1.60 | 1.66 | 1.57 | 1.49 | 1.78 | 2.01 | 1.55 | 1.55 | 1.56 |
| August | 1.58 | 1.57 | 1.55 | 1.40 | 1.87 | 2.25 | 1.52 | 1.51 | 1.46 |
| September | 1.52 | 1.76 | 1.38 | 1.42 | 1.75 | 2.04 | 1.56 | 1.47 | 1.39 |
| October | 1.65 | 1.89 | 1.66 | 1.53 | 1.82 | 2.29 | 1.56 | 1.59 | 1.51 |
| November | 1.77 | 1.79 | 1.66 | 1.51 | 1.95 | 2.20 | 1.68 | 1.55 | 1.65 |
| December | 1.55 | 1.81 | 1.67 | 1.55 | 1.87 | 2.30 | 1.64 | 1.52 | 1.74 |
| Average | 1.65 | 1.58 | 1.69 | 1.54 | 1.73 | 2.05 | 1.71 | 1.57 | 1.52 |

1/ F.o.b. East Coast ports for 65 percent protein meal, bagged, as quoted at New York City.

2/ Wholesale at Decatur, Ill., for 50 percent solvent meal, bulk.

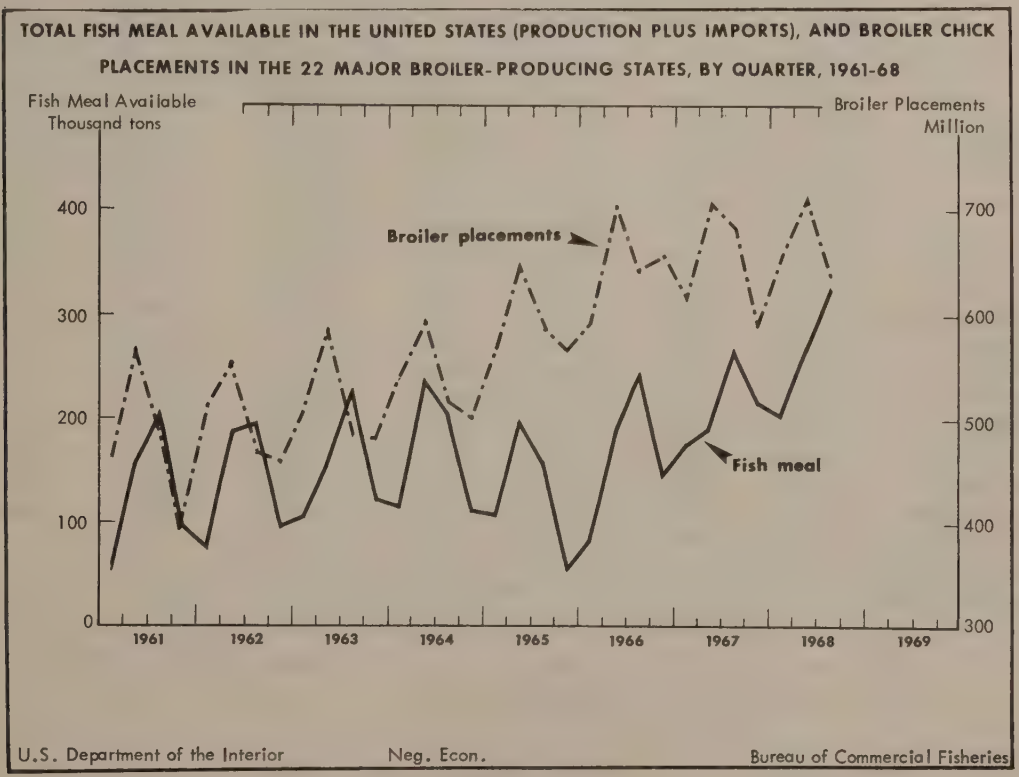



Figure 5

## Prices

Menhaden Meal Price--Well above Last Year

The New York average price of menhaden meal (60 percent protein, fell from $149.65 per ton, bagged, f.o.b. East Coast and Gulf points in July 1968 to $140.50 in November (table 17). During the latter part of November, the price of menhaden meal began to rise and by the last week of December was quoted at $148 per ton at New York. Although prices in the last half of 1968 were low compared to 1965 and 1966, they were $5 to $15 higher than prices in 1967 and higher than the prices in 1960-64.

Table 17.--Average monthly price of menhaden meal[1/] f.o.b. East Coast points 1962-68

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|
| | Dollars per short ton | | | | | | |
| January | 120.40 | 131.35 | 132.00 | 144.15 | [2/]179.80 | 153.10 | [2/]131.00 |
| February | 122.00 | 129.00 | 130.00 | 146.25 | [2/]172.50 | [2/]154.00 | [2/]131.00 |
| March | 123.00 | 126.15 | 128.25 | 150.00 | [2/]170.60 | [2/]154.00 | [2/]131.00 |
| April | 124.00 | 126.50 | 128.00 | 153.00 | [2/]163.00 | 135.00 | [2/]131.00 |
| May | 125.25 | 125.00 | 128.25 | 156.00 | [2/]153.80 | 135.80 | [2/]131.00 |
| June | 123.00 | 125.00 | 129.80 | 160.90 | 160.35 | 139.00 | 149.00 |
| July | 122.70 | 125.00 | 130.90 | 170.25 | 164.00 | 137.40 | 149.65 |
| August | 123.25 | 125.00 | 131.00 | 172.10 | 169.00 | 137.10 | 149.00 |
| September | 123.75 | 125.00 | 132.90 | 175.00 | 166.20 | 136.75 | 145.00 |
| October | 126.80 | 127.70 | 140.20 | 185.40 | 160.00 | 136.00 | 141.60 |
| November | 128.25 | 129.25 | 140.75 | 186.00 | 151.15 | [2/]132.00 | 140.50 |
| December | 130.50 | 133.90 | 140.75 | 186.00 | 153.10 | [2/]131.60 | 145.10 |
| Average[3/] | 124.40 | 127.40 | 132.75 | 165.40 | 163.60 | 140.15 | 145.70 |

1/ 60 percent protein, bagged, as quoted at New York City.
2/ Nominal price as presented in the Oil, Paint and Drug Reporter.
3/ Simple average.

Sources: U.S. Department of the Interior, Bureau of Commercial Fisheries, and the Oil, Paint and Drug Reporter.

Price of Peruvian Fish Meal--Fell $14 between July and October

The average price of Peruvian fish meal (65 percent protein) fell from $143.20 per ton, f.o.b. East Coast and Gulf ports in July, to $129.20 per ton in October. In November, prices started to rise and by the end of December had risen to $139 per ton. The average for December was $138.10 (table 18).

The increase in prices in November and December was apparently due to the anticipation of the resumption of the longshoremen's strike on December 20. Feed market news publications reported that fish meal was being stockpiled so that it would be available for feed mixers.

Table 18.--Average monthly price of Peruvian fish meal[1/] f.o.b. East Coast ports, 1962-68

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|
| | Dollars per short ton | | | | | | |
| January | 114.70 | 128.00 | 133.25 | 141.60 | 173.00 | 148.20 | 120.20 |
| February | 121.75 | 123.00 | 133.25 | 144.90 | 170.90 | 140.00 | 119.00 |
| March | 125.10 | 121.90 | 132.40 | 142.70 | 165.80 | 134.50 | 116.00 |
| April | 130.50 | 118.50 | 126.00 | 148.40 | 153.75 | 130.50 | 115.20 |
| May | 127.70 | 118.90 | 126.10 | 153.75 | 155.40 | 127.70 | 131.90 |
| June | 120.00 | 118.10 | 125.70 | 166.50 | 155.50 | 131.25 | 140.00 |
| July | 119.10 | 117.80 | 130.00 | 172.90 | 161.00 | 131.60 | 143.20 |
| August | 118.75 | 115.85 | 132.90 | 181.00 | 161.00 | 131.50 | 137.90 |
| September | 120.90 | 117.10 | 134.70 | 182.50 | 152.25 | 128.90 | 132.75 |
| October | 126.20 | 122.75 | 140.00 | 184.90 | 143.10 | 124.30 | 129.20 |
| November | 126.40 | 123.25 | 141.50 | 186.00 | 144.80 | 121.00 | 131.00 |
| December | 126.75 | 130.40 | 141.50 | 180.25 | 152.50 | 121.00 | 138.10 |
| Average[2/] | 123.15 | 121.30 | 133.10 | 165.45 | 157.40 | 130.85 | 129.55 |

[1/] 65 percent protein, bagged, as quoted at New York City.

[2/] Simple average.

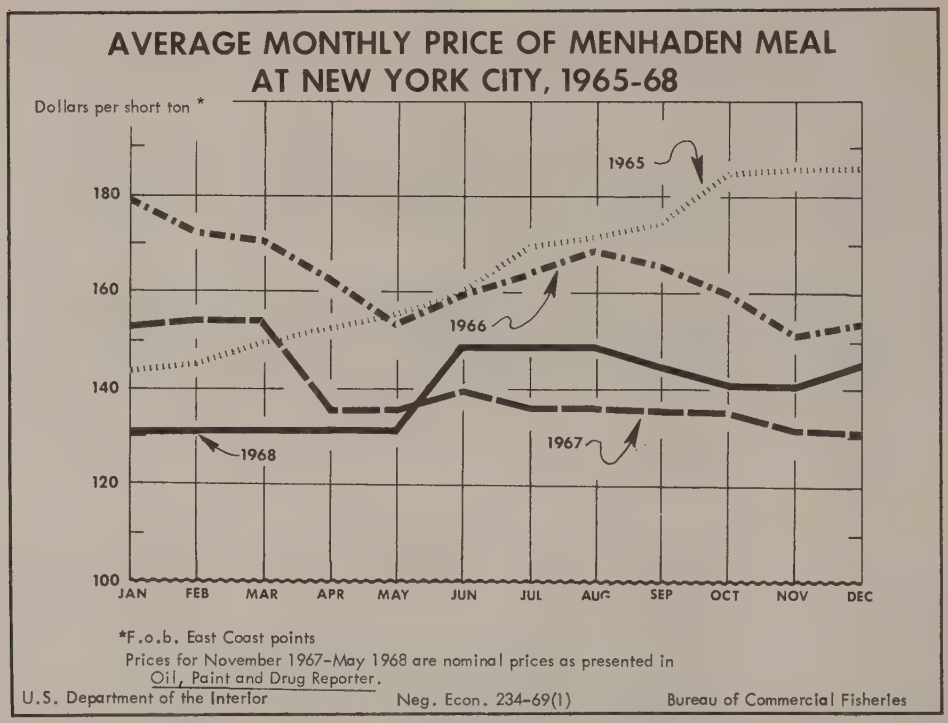



Figure 6

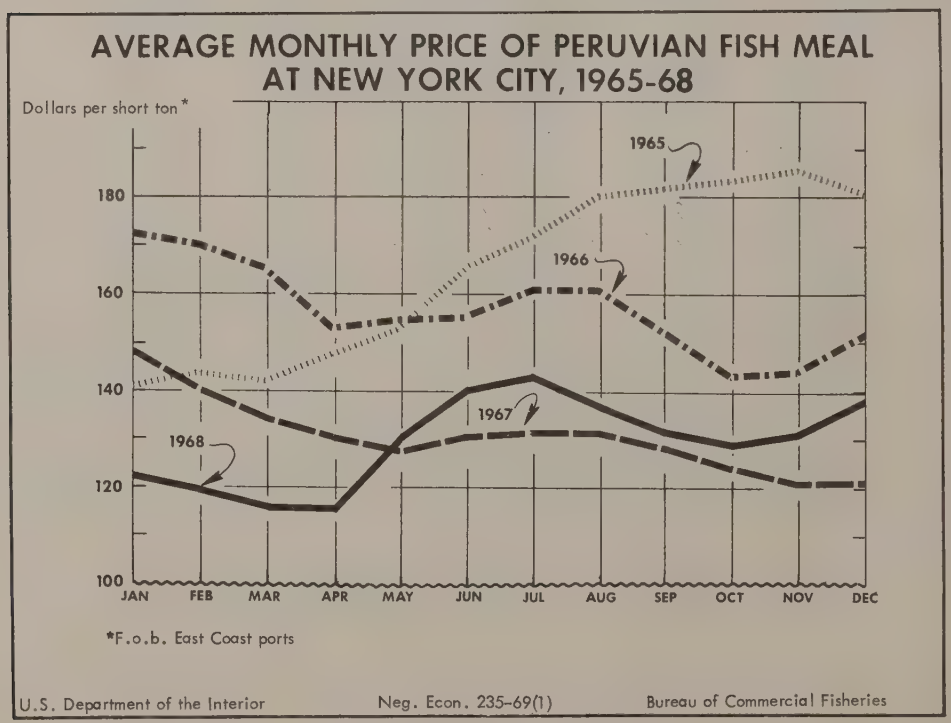



Figure 7

## FISH SOLUBLES

### Supply

Production of Fish Solubles--Up 3 Percent from 1967

About 67,700 tons of fish solubles were produced in January-October 1968--up 3 percent from the same period in 1967 but down 17 percent from the 1963-67 average (table 19). In 1968, 75 percent of the solubles was made from menhaden and 22 percent from anchovies. Sixty-nine percent came from menhaden in 1967 whereas the 1963-67 average was 75 percent. Sixty-one percent of the menhaden solubles were produced in the Gulf Coast area in 1968, and the rest was produced in the Atlantic Coast area.

Table 19.--U.S. production of fish solubles by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[1] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Thousand short tons | | | | | |
| January | 1.7 | 1.6 | 1.8 | 1.6 | 1.5 | 1.2 | 1.4 | 1.5 | 0.5 |
| February | 1.8 | 1.6 | 1.6 | 1.5 | 0.9 | 1.1 | 1.8 | 1.1 | 0.6 |
| March | 2.0 | 2.4 | 2.0 | 2.0 | 1.0 | 1.1 | 3.6 | 2.0 | 1.6 |
| April | 2.6 | 2.6 | 3.3 | 4.1 | 3.9 | 3.6 | 3.6 | 4.8 | 4.3 |
| May | 7.1 | 12.3 | 14.4 | 15.7 | 12.9 | 10.7 | 8.2 | 6.9 | 6.3 |
| June | 18.6 | 16.1 | 21.6 | 14.1 | 18.9 | 17.8 | 15.1 | 13.5 | 11.1 |
| July | 16.7 | 20.3 | 21.0 | 15.2 | 18.0 | 18.6 | 13.9 | 12.4 | 14.8 |
| August | 14.6 | 16.9 | 16.0 | 18.7 | 14.7 | 18.0 | 12.7 | 12.2 | 11.9 |
| September | 11.4 | 10.5 | 12.2 | 11.5 | 9.9 | 8.8 | 9.8 | 6.6 | 10.0 |
| October | 6.5 | 7.5 | 13.3 | 7.4 | 5.1 | 6.7 | 5.3 | 4.9 | 6.5 |
| November | 3.5 | 4.2 | 4.3 | 4.9 | 3.8 | 4.7 | 5.6 | 5.3 | |
| December | 2.8 | 4.6 | 1.7 | 3.5 | 2.7 | 2.5 | 2.4 | 3.4 | |
| Total[2] | 89.4 | 100.6 | 113.2 | 100.2 | 93.3 | 94.8 | 83.4 | 74.6 | |

[1]Preliminary.
[2]Figures may not add to total because of rounding.

## Imports of Fish Solubles--Down 51 Percent from 1967

The United States imported about 1,700 tons of fish solubles during the first 10 months of 1968--about half the amount imported in 1967 and down 56 percent from the 1963-67 average (table 20). About two-fifths of the imports came from Canada in January-October 1968--compared to about one-third in 1967. Peru supplied 36 percent of the fish solubles imports in 1968--compared to 48 percent in 1967.

## Total Supplies in January-October--the Same as in 1967

The total amount of fish solubles--production plus imports--available for use during January-October 1968 was 69,400 tons--the same amount that was available in 1967 but down 19 percent from the 1963-67 average (table 21).

Table 20.--U.S. imports of fish solubles by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[1/] |
|---|---|---|---|---|---|---|---|---|---|
| | Thousand short tons | | | | | | | | |
| January | 0.2 | 0.2 | 0.3 | 0.1 | 0.4 | 0.6 | 0.2 | 0.5 | 0.1 |
| February | 1.9 | 0.2 | 2.2 | 0.2 | 0.5 | 1.7 | 2/ | 0.1 | 0.1 |
| March | 0.1 | 0.1 | 0.3 | 1.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.7 |
| April | 0.1 | 0.2 | 0.3 | 0.2 | 0.4 | 0.3 | 1.4 | 1.8 | 0.1 |
| May | 0.1 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 1.2 | 0.3 | 0.1 |
| June | 0.1 | 0.2 | 0.9 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| July | 0.1 | 0.7 | 0.3 | 0.3 | 1.5 | 0.1 | 0.2 | 0.1 | 0.1 |
| August | 0.2 | 0.3 | 0.4 | 0.3 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| September | 2/ | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 |
| October | - | 0.1 | 0.3 | 0.4 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 |
| November | 0.3 | 3.6 | 0.4 | 0.2 | 0.2 | 1.2 | 0.3 | 0.2 | |
| December | 0.1 | 0.5 | 0.4 | 3.2 | 0.3 | 0.1 | 0.2 | 0.1 | |
| Total[3/] | 3.2 | 6.7 | 6.3 | 7.1 | 4.5 | 5.1 | 4.3 | 3.7 | |

[1/] Preliminary.

[2/] Less than 50 tons.

[3/] Figures may not add to total because of rounding.

Table 21.--Total fish solubles available in the United States: production plus imports, by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[1/] |
|---|---|---|---|---|---|---|---|---|---|
| | Thousand short tons | | | | | | | | |
| January | 1.9 | 1.8 | 2.1 | 1.7 | 1.9 | 1.8 | 1.6 | 2.0 | 0.6 |
| February | 3.7 | 1.8 | 3.8 | 1.7 | 1.4 | 2.8 | 1.8 | 1.2 | 0.7 |
| March | 2.1 | 2.5 | 2.3 | 3.1 | 1.2 | 1.3 | 3.8 | 2.1 | 2.3 |
| April | 2.7 | 2.8 | 3.6 | 4.3 | 4.3 | 3.9 | 5.0 | 6.6 | 4.3 |
| May | 7.2 | 12.6 | 14.7 | 16.1 | 13.2 | 10.9 | 9.4 | 7.2 | 6.4 |
| June | 18.7 | 16.3 | 22.5 | 14.4 | 19.1 | 18.0 | 15.3 | 13.6 | 11.2 |
| July | 16.8 | 21.0 | 21.3 | 15.5 | 19.5 | 18.7 | 14.1 | 12.5 | 14.9 |
| August | 14.8 | 17.2 | 16.4 | 19.0 | 14.8 | 18.2 | 12.8 | 12.3 | 12.0 |
| September | 11.4 | 10.8 | 12.4 | 11.7 | 10.1 | 9.0 | 9.9 | 6.8 | 10.2 |
| October | 6.5 | 7.6 | 13.6 | 7.8 | 5.3 | 6.8 | 5.4 | 5.1 | 6.7 |
| November | 3.8 | 7.8 | 4.7 | 5.1 | 4.0 | 5.9 | 5.9 | 5.5 | |
| December | 2.9 | 5.1 | 2.1 | 6.7 | 3.0 | 2.6 | 2.6 | 3.5 | |
| Total[2/] | 92.6 | 107.3 | 119.5 | 107.3 | 97.8 | 99.9 | 87.7 | 78.3 | |

[1/] Preliminary.

[2/] Figures may not add to total because of rounding.

## Demand

Even though prices for fish solubles remained favorable relative to prices for fish meal and other substitutes, the utilization of solubles was very light through November of 1968.

## Prices

Prices for menhaden solubles continued at a low level during the last half of 1968. The average price of menhaden solubles had fallen to $51.25 per ton f.o.b. East Coast plants by December--the lowest price since September 1961, when the average was $49.70 per ton. Fish solubles prices have declined steadily since December 1966, when they averaged $81.90 (table 22).

Table 22.--Average monthly price of menhaden solubles[1/] f.o.b. East Coast plants, 1962-68

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|
| | Dollars per short ton | | | | | | |
| January | 58.00 | 65.00 | 75.00 | 58.60 | 66.25 | 80.85 | 60.50 |
| February | 58.75 | 66.25 | 75.00 | 59.40 | 66.50 | 79.00 | 63.75 |
| March | 59.60 | 62.50 | 62.25 | 61.25 | 66.70 | 70.75 | 61.25 |
| April | 59.70 | 61.25 | 62.25 | 56.25 | 68.75 | 64.60 | 56.25 |
| May | 56.25 | 61.25 | 62.25 | 53.75 | 68.75 | 64.00 | 54.05 |
| June | 53.10 | 61.25 | 62.25 | 55.75 | 68.75 | 64.40 | 53.75 |
| July | 53.25 | 61.25 | 62.25 | 56.85 | 68.75 | 64.05 | 53.50 |
| August | 54.00 | 61.75 | 61.95 | 60.00 | 68.75 | 62.85 | 52.50 |
| September | 55.40 | 64.10 | 61.20 | 61.25 | 72.50 | 61.25 | 51.90 |
| October | 58.30 | 66.55 | 61.05 | 63.95 | 78.75 | 60.75 | 51.50 |
| November | 64.95 | 75.00 | 61.25 | 65.25 | 79.25 | 60.00 | 51.55 |
| December | 64.15 | 75.65 | 61.25 | 66.25 | 81.90 | 60.00 | 51.25 |
| Average[2/] | 57.95 | 65.15 | 64.00 | 59.90 | 71.30 | 66.05 | 55.15 |

[1/] In tank cars; prices quoted at New York City.

[2/] Simple average.

## FISH OIL

### Supply

Fish Oil Production in First 10 Months--Nearly 1½ Times 1967 Production

About 153.3 million pounds of fish oil were produced in the United States in January-October 1968--49 percent more than in the same period in 1967 but about the same as the 1963-67 average (tables 23 and 24). Total annual production for 1967 was only 122.4 million pounds. Most of the increase in the 1968 production occurred in July-October; production in September and October was about twice that in 1967.

Eighty-eight percent of the fish oil came from menhaden in January-October 1968--more than the 82 percent in 1967 and the same as the 1963-67 average (table 24). Sixty percent more menhaden oil was produced in January-October 1968 than in 1967. Gulf Coast plants produced 70 percent of the menhaden oil in the 10-month period in 1968--compared to 73 percent in 1967. Most of the rest was made by plants in the Middle Atlantic and Chesapeake Bay areas.

The balance of the fish oil--18.2 million pounds or 12 percent--was made from herring, tuna, mackerel, anchovies, and other fish (table 24).

Table 23.--U.S. production of fish oil by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[1/] |
|---|---|---|---|---|---|---|---|---|---|
| | Million pounds | | | | | | | | |
| January | 0.5 | 0.5 | 0.8 | 0.5 | 0.5 | 0.6 | 0.4 | 1.2 | 0.9 |
| February | 0.6 | 0.4 | 0.4 | 0.4 | 0.2 | 0.5 | 0.2 | 0.6 | 0.6 |
| March | 0.6 | 0.5 | 0.4 | 0.4 | 0.7 | 0.7 | 1.0 | 0.9 | 1.1 |
| April | 2.5 | 3.5 | 5.7 | 6.5 | 4.4 | 10.6 | 5.5 | 3.6 | 4.0 |
| May | 16.9 | 35.8 | 33.4 | 33.5 | 29.9 | 23.2 | 19.3 | 9.4 | 10.8 |
| June | 37.1 | 51.3 | 54.9 | 28.2 | 42.9 | 41.6 | 34.7 | 20.5 | 21.0 |
| July | 41.8 | 59.1 | 47.7 | 29.0 | 33.8 | 41.6 | 29.6 | 21.6 | 37.2 |
| August | 38.1 | 51.3 | 33.4 | 34.6 | 28.4 | 37.8 | 22.5 | 22.4 | 30.9 |
| September | 33.8 | 26.0 | 31.2 | 21.2 | 19.8 | 18.1 | 20.5 | 13.6 | 26.3 |
| October | 23.5 | 16.1 | 39.0 | 15.0 | 5.6 | 9.5 | 7.8 | 9.3 | 20.4 |
| November | 12.5 | 10.6 | 8.3 | 10.1 | 8.3 | 8.2 | 16.4 | 13.5 | |
| December | 8.0 | 11.6 | 0.7 | 6.4 | 5.7 | 3.1 | 6.8 | 5.8 | |
| Total[2/] | 215.9 | 266.7 | 255.9 | 185.8 | 180.2 | 195.5 | 164.7 | 122.4 | |

[1/] Preliminary.

[2/] Figures may not add to total because of rounding.

Table 24.--U.S. production of fish oil by raw material source, January-October 1967, 1968, and 1963-67 average

| Source | 1963-67 average | | 1967 | | 1968[1] | |
|---|---|---|---|---|---|---|
| | Million pounds | Percent | Million pounds | Percent | Million pounds | Percent |
| Alewives | 0.9 | 0.6 | 1.8 | 1.7 | [2] | - |
| Groundfish | 1.6 | 1.0 | 1.2 | 1.2 | [2] | - |
| Herring | 7.1 | 4.6 | 4.9 | 4.7 | 4.7 | 3.1 |
| Menhaden[3] | 134.4 | 88.0 | 84.5 | 82.0 | 135.1 | 88.1 |
| Tuna, mackerel, and anchovies | 4.4 | 2.9 | 5.4 | 5.2 | 4.0 | 2.6 |
| Unclassified | 4.5 | 2.9 | 5.4 | 5.2 | 9.5 | 6.2 |
| Total[4] | 152.8 | 100.0 | 103.1 | 100.0 | 153.3 | 100.0 |

[1]Preliminary
[2]Included in 'unclassified.'
[3]Includes a small quantity of other species.
[4]Figures may not add to total because of rounding.

## Fish Oil Stocks on November 1--114.1 Million Pounds

Stocks of fish oil in the United States on November 1, 1968, were an estimated 114.1 million pounds--up 43 percent from stocks held at the beginning of the year and up 11 percent from the same time last year (table 25). These large stocks were a result of increased production and lower domestic use and exports.

Table 25.-- U.S. stocks of fish oil at the beginning of the month, 1962-68[1/]

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[2/] |
|---|---|---|---|---|---|---|---|
| | Million pounds | | | | | | |
| January | 94.0 | 125.9 | 96.9 | 70.9 | 100.4 | 99.4 | 80.0 |
| February | 87.9 | 113.3 | 60.4 | 68.6 | 85.4 | 97.2 | 83.3 |
| March | 79.2 | 115.5 | 47.0 | 55.2 | 75.0 | 90.8 | 61.0 |
| April | 69.6 | 88.2 | 42.2 | 50.4 | 60.5 | 62.2 | 55.8 |
| May | 66.8 | 59.8 | 43.9 | 54.6 | 60.3 | 73.4 | 64.4 |
| June | 91.1 | 77.3 | 46.7 | 69.0 | 63.1 | 97.4 | 69.1 |
| July | 107.7 | 97.4 | 55.5 | 80.9 | 64.7 | 100.7 | 82.4 |
| August | 128.9 | 87.4 | 66.8 | 103.3 | 80.4 | 102.4 | 103.6 |
| September | 110.8 | 96.0 | 78.0 | 136.2 | 87.9 | 103.2 | 122.5 |
| October | 123.7 | 95.9 | 87.7 | 110.9 | 111.0 | 95.9 | 132.9 |
| November | 133.3 | 76.8 | 66.9 | 101.7 | 102.1 | 102.4 | 114.1 |
| December | 119.6 | 123.9 | 75.2 | 111.4 | 120.0 | 99.4 | |
| Average | 101.0 | 96.4 | 63.9 | 84.4 | 84.2 | 93.7 | |

[1/]Includes mammal oil other than sperm oil, and includes hydrogenated fats and other fats and oils "in process."
[2/]Preliminary.

Source: Current Industrial Reports: Fats and Oils, Series M20K, U.S. Department of Commerce, Bureau of the Census.

## Industrial Use of Fish Oil in January-October--15 Percent below 1967

In January-October 1968, the United States used 26 million pounds of fish oil in the production of paint, varnish, resin, plastics, lubricants, and other industrial products (table 26). This amount is 15 percent less than the amount used in the same period in 1967 and 30 percent less than the 1963-67 average.

## Exports of Fish Oil--Down 43 Percent from 1967

The United States exported 41.5 million pounds of fish oil in January-October 1968--43 percent less than the amount exported in the same period in 1967, and 66 percent less than the 1963-67 average (tables 27 and 28). Ninety-eight percent of the fish oil exported in 1968 was menhaden oil. Menhaden oil exports in January-October 1968 were down 44 percent from exports in 1967.

Table 26.--Industrial use of fish oil in the United States, by month, 1960-68[1/]

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968[2/] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Million pounds | | | | |
| January | 4.4 | 5.0 | 5.2 | 5.0 | 3.9 | 3.2 | 2.4 | 2.9 | 2.6 |
| February | 3.7 | 4.5 | 5.0 | 3.8 | 3.9 | 3.2 | 3.5 | 2.8 | 2.6 |
| March | 4.9 | 5.9 | 5.3 | 3.9 | 3.9 | 3.3 | 3.3 | 2.8 | 3.0 |
| April | 4.0 | 5.1 | 5.3 | 4.0 | 4.6 | 3.4 | 3.5 | 4.1 | 2.5 |
| May | 4.1 | 5.7 | 5.5 | 4.2 | 4.2 | 3.0 | 3.7 | 3.1 | 2.6 |
| June | 5.1 | 5.4 | 6.3 | 4.7 | 4.0 | 4.0 | 3.8 | 3.3 | 2.5 |
| July | 4.7 | 5.7 | 5.0 | 5.0 | 3.4 | 3.2 | 2.7 | 3.0 | 2.7 |
| August | 5.9 | 5.7 | 5.0 | 4.6 | 4.7 | 4.5 | 3.7 | 3.1 | 2.2 |
| September | 5.7 | 5.7 | 5.2 | 4.2 | 4.2 | 4.3 | 3.9 | 3.2 | 2.8 |
| October | 4.9 | 5.5 | 5.3 | 5.0 | 3.8 | 3.9 | 2.5 | 2.4 | 2.5 |
| November | 4.9 | 5.1 | 4.8 | 3.7 | 3.6 | 4.4 | 2.7 | 2.5 | |
| December | 4.5 | 5.5 | 5.0 | 4.0 | 3.5 | 4.1 | 3.1 | 2.6 | |
| Total[3/] | 56.8 | 64.8 | 62.9 | 52.1 | 47.7 | 44.5 | 38.8 | 35.8 | |

1/ Includes mammal oil other than sperm oil.
2/ Preliminary.
3/ Figures may not add to total because of rounding.
Source: Current Industrial Reports: Fats and Oils, Series M20K, U.S. Department of Commerce, Bureau of the Census.

About 74 percent of the fish oil exported in the first 10 months of 1968 went to Sweden, 12 percent to West Germany, 10 percent to the Netherlands, and the rest to Canada, the United Kingdom, and other countries (table 28). All of the oil that went to Sweden, West Germany, and the Netherlands was menhaden oil. In 1967, 45 percent of the fish oil went to the Netherlands (eight times the amount shipped in 1968), 28 percent went to Sweden (two-thirds the amount shipped in 1968), 11 percent to West Germany, 9 percent to the United Kingdom (compared to an insignificant amount in 1968), and the rest to other countries.

Table 27.--U.S. exports of fish oil by month, 1960-68

| Month | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 1/ |
|---|---|---|---|---|---|---|---|---|---|
| | Million pounds | | | | | | | | |
| January | 2.1 | 13.5 | 0.5 | 0.1 | 0.2 | 0.1 | 2.3 | 17.9 | 0.9 |
| February | 23.8 | 17.5 | 21.6 | 2.4 | 23.5 | 0.1 | 4.2 | 2/ | 6.0 |
| March | 3.2 | 5.6 | 19.1 | 44.4 | 0.2 | 11.4 | 9.9 | 10.5 | 12.6 |
| April | 5.7 | 7.4 | 10.3 | 28.5 | 22.8 | 0.1 | 0.1 | 2/ | 0.1 |
| May | 2.4 | 3.2 | 6.5 | 22.1 | 9.3 | 0.3 | 17.8 | 0.1 | 2/ |
| June | 15.6 | 21.0 | 4.9 | 0.3 | 0.1 | 18.1 | 12.9 | 0.8 | 2/ |
| July | 40.6 | 4.4 | 0.1 | 29.3 | 40.5 | 16.2 | 19.5 | 2.3 | 0.1 |
| August | 1.4 | 13.3 | 33.3 | 37.5 | 9.6 | 21.2 | 6.1 | 24.8 | 7.0 |
| September | 14.0 | 9.5 | 0.2 | 22.4 | 14.2 | 13.5 | 2/ | 10.2 | 3.4 |
| October | 4.4 | 15.2 | 26.1 | 41.9 | 19.8 | 10.8 | 4.3 | 5.7 | 11.4 |
| November | 14.6 | 1.4 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 2.2 | |
| December | 15.8 | 10.5 | 0.2 | 33.3 | 11.1 | 11.8 | 0.1 | 2.3 | |
| Total | 143.6 | 122.5 | 123.0 | 262.3 | 151.4 | 103.8 | 77.3 | 76.8 | |

1/ Preliminary.

2/ Less than 50,000 pounds.

Table 28.--U.S. exports of fish oils by country of destination, January-October 1967, 1968, and 1963-67 average

| Country | 1963-67 average | | 1967 | | 1968[1] | |
|---|---|---|---|---|---|---|
| | Million pounds | Percent | Million pounds | Percent | Million pounds | Percent |
| Canada | 2.2 | 1.8 | 0.3 | 0.4 | 1.6 | 3.9 |
| Netherlands | 26.5 | 21.7 | 32.6 | 45.1 | 4.1 | 9.9 |
| Norway | 10.2 | 8.4 | - | - | - | - |
| Sweden | 38.3 | 31.4 | 20.4 | 28.2 | 30.6 | 73.7 |
| United Kingdom | 20.3 | 16.6 | 6.6 | 9.2 | [2] | - |
| West Germany | 16.9 | 13.9 | 8.1 | 11.3 | 5.1 | 12.2 |
| Other | 7.6 | 6.2 | 4.2 | 5.8 | 0.1 | 0.3 |
| Total[3] | 122.1 | 100.0 | 72.3 | 100.0 | 41.5 | 100.0 |

[1]Preliminary.
[2]Less than 50,000 pounds.
[3]Figures may not add to total because of rounding.

## Prices

Menhaden Oil Prices--Showed Slight Increase at End of Year

In September, November, and December of this year, the average price of menhaden oil quoted at New York was 4.40 cents per pound f.o.b. East Coast plants--the lowest price since December 1962 when the average was 4.00 cents per pound (table 29 and figure 8). Menhaden oil prices have been on a steady downward trend since May 1966, when the average price was 9.75 cents per pound. However, during the latter part of December, oil prices gave an indication of reversing this trend, increasing from an average of 4.40 cents per pound during the middle of December to 4.60 cents the last week in December. Prices for Gulf Coast plants were 4.10 to 4.75 cents per pound the last week in December.

The average annual price of menhaden oil in 1968 was 5.05 cents per pound--compared to 7.00 cents per pound in 1967 and 9.45 cents per pound in 1966.

Table 29.--Average monthly price of menhaden oil[1] f.o.b. East Coast plants, 1962-68

| Month | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|
| | Cents per pound | | | | | | |
| January | 4.75 | 4.70 | 8.40 | 9.15 | 9.50 | 8.90 | 6.00 |
| February | 4.75 | 5.40 | 8.35 | 9.50 | 9.70 | 8.90 | 6.10 |
| March | 4.75 | 5.50 | 8.50 | 9.50 | 9.75 | 8.60 | 5.75 |
| April | 4.75 | 5.75 | 8.75 | 9.50 | 9.75 | 7.20 | 5.35 |
| May | 4.70 | 5.60 | 8.50 | 9.45 | 9.75 | 6.90 | 5.25 |
| June | 4.40 | 6.50 | 8.65 | 9.15 | 9.60 | 6.95 | 5.25 |
| July | 4.20 | 6.75 | 8.75 | 8.95 | 9.40 | 6.70 | 4.85 |
| August | 4.25 | 7.10 | 8.80 | 9.30 | 9.00 | 6.00 | 4.55 |
| September | 4.05 | 7.30 | 9.05 | 9.50 | 9.45 | 5.80 | 4.40 |
| October | 3.95 | 7.60 | 9.20 | 9.50 | 9.45 | 6.00 | 4.45 |
| November | 4.00 | 7.75 | 9.40 | 9.50 | 9.20 | 6.00 | 4.40 |
| December | 4.00 | 8.00 | 9.40 | 9.50 | 8.90 | 6.00 | 4.40 |
| Average[2] | 4.40 | 6.50 | 8.80 | 9.35 | 9.45 | 7.00 | 5.05 |

[1]Crude oil in tank cars; prices quoted at New York City.
[2]Simple average.

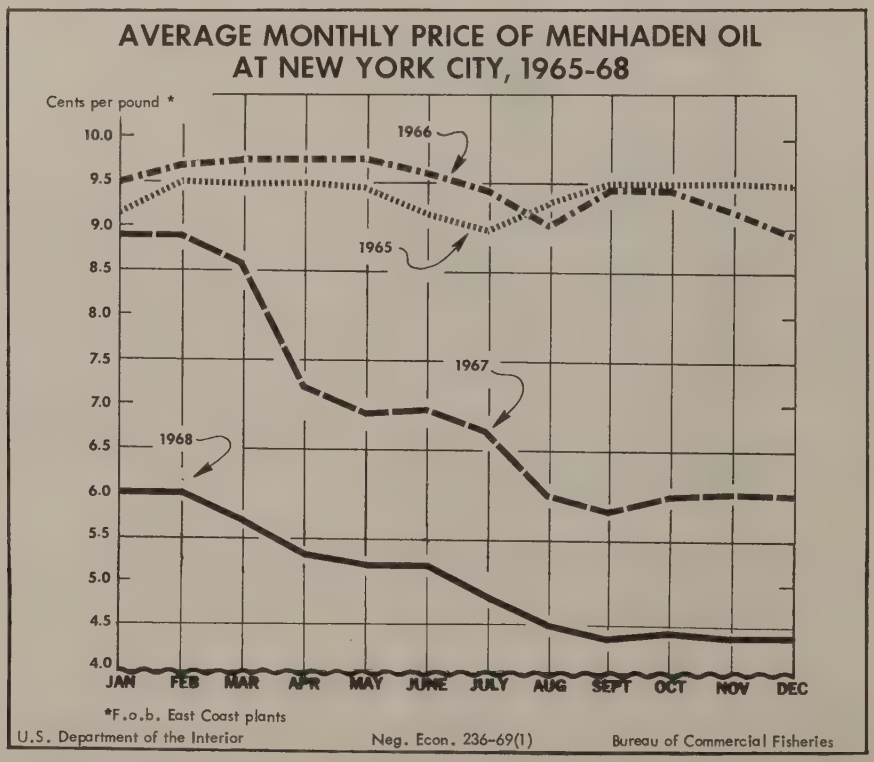



Figure 8

# OUTLOOK: JANUARY-MARCH 1969

## FISH MEAL

### Supply

Historically, the United States has produced very little fish meal in the first 3 months of the year. In the last 9 years, fish meal production in January-March has ranged between 7,500 tons in 1964 and 14,500 tons in 1967. Production in the first 3 months of 1969 is expected to be less than 15,000 tons. Production of menhaden meal should be negligible in this period.

Most of United States imports in the first quarter have come from Canada, Chile, Norway, and Peru, with the FEO countries (Chile, Norway, and Peru) providing 91 percent of United States imports in the first quarter of 1967 and 93 percent in 1968. Peru alone provided 62 percent of imports in the first 3 months of 1967 and 80 percent in 1968.

In the first quarter of 1969, the FEO countries are expected to continue to be major suppliers of fish meal to the United States. The amount of meal these countries ship to the United States depends on their total exports and on the relation between the price of fish meal in the United States and the price of fish meal in Europe. Total exports from FEO countries in the first quarter of 1968 were 908,600 short tons, and 20 percent of these exports were to the United States. Total exports from Peru were 606,700 tons--or two-thirds of total FEO exports. Twenty-six percent of Peru's exports came to the United States. Total exports from Peru and the other FEO countries are not expected to be more than those in the first quarter of 1968, but if the ratio between the price of Peruvian fish meal at New York and the price of Peruvian fish meal at Hamburg, Germany, remains at the December level of about 1.15 to 1, then a greater percentage of exports is expected to come to the United States from the FEO countries in January-March 1969 than in 1968.

We estimate total U.S. imports of fish meal to be at least 200,000 tons in the first quarter of 1969, with the possibility that the United States will import up to 250,000 tons in that period. It is estimated that at least 90 percent of these imports will come from FEO countries.

Of course, the amount of meal actually imported also will depend on developments with respect to production and stocks in the major exporting countries and on other factors such as the longshoremen's strike.

Reports from Peru indicate that a temporary closed season will be placed on the anchovy fishery sometime in February or March. To the extent that this closed season affects Peru's production and stocks in this period, the amount of meal coming to the United States from Peru will be affected; however, production in other FEO countries is expected to make up any production deficit in Peru. Peru's fish meal stocks are estimated to be about 380,000 metric tons (418,900 short tons) on January 1, 1969, and total FEO stocks are estimated to be at least 700,000 metric tons (771,600 short tons). These stocks, combined with expected production in the first quarter, will be more than enough to satisfy U.S. and world needs in that period.

Under the price conditions cited above, total supplies of fish meal (except stocks) available for use in the United States during the first quarter of 1969 could normally be expected to be at least 210,000 tons--about 4 percent more than in 1968. However, if the longshoremen's strike continues through a good part of this period, then substantially less meal could come to the United States.

## Demand

As mentioned previously, the amount of fish meal used during a given period depends on the number of animal consuming units--particularly broilers, which use at least 70 percent of the domestic supplies--and on the ratio of the price of fish meal to the price of competing feed ingredients.

The number of broiler chicks placed on feed in the first 3 months of the year has been increasing steadily over the past several years. This trend is expected to continue into 1969. The U.S. Department of Agriculture estimates that about 685 million broiler chicks will be placed on feed in the first quarter of 1969--about 4 percent more than in 1968. If broilers consume an average of 70 percent of the fish meal, this number of broilers would mean a potential outlet for up to 250,000 tons of fish meal.

In the last week of December 1968, the ratio between the price of Peruvian fish meal at New York and the price of soybean meal at

Decatur, Ill., was 1.74 to 1. If this price ratio were to hold through the first quarter of 1969, if 685 million broiler chicks are placed on feed, and if prices of other important feed ingredients remain stable, then the Bureau of Commercial Fisheries estimates that the United States would use 175,000 to 205,000 tons of fish meal in the first quarter. If the ratio were to decrease due to either increasing soybean meal prices or decreasing fish meal prices, more meal probably would be used.

## FISH SOLUBLES

### Supply

Since 1960, production of fish solubles has been between 2,700 to 6,800 tons in the first quarter. Production in the first quarter of 1969 is also expected to fall within this range.

Imports of fish solubles have not been over 1,000 tons in the first quarter of the last 3 years and are not expected to be over that figure in the first quarter of 1969. Therefore, total supplies of fish solubles (excluding stocks) are estimated to be less than 8,000 tons and probably will be nearer half of this figure.

### Demand

The future use and prices of fish solubles are difficult to foretell at the present time. As indicated previously, prices of menhaden solubles have declined steadily since December 1966 and averaged about $51 the last 3 months of 1968. Even though these low prices should mean an increase in the use of this product, such increased usage has not occurred.

## FISH OIL

### Supply

As with the production of fish meal and solubles, the domestic production of fish oil is fairly light in the first quarter of the

year. Since 1960, fish oil production in the first quarter has been 1.3 to 2.7 million pounds. Production of fish oil in the first quarter of 1969 is expected to fall within this range.

Stocks of fish oil on January 1 are expected to be as high as 130 million pounds. Stocks at the end of the first quarter for the last 4 years have been 50 to 60 million pounds.

## Demand

Even though prices of fish oil were at a low level in 1968--falling to 4.40 cents per pound in September, November, and December (the lowest level since December 1962)--the industrial use of fish oil was lower than any other year for which we have statistics. As indicated in the Review section, prices for fish oil edged up slightly in the latter part of December. This rise may indicate an increased demand for fish oil. First quarter use of fish oil has declined steadily between 1962, when 15.5 million pounds were used, and 1968, when 8.2 million pounds were used. Current ratios between menhaden oil price and the prices of the competing industrial oils, such as tall, tung, and linseed, indicates more fish oil should be used in the first quarter of 1969 than in 1968.

U.S. exports of fish oil in the first quarter have varied widely in the last 9 years, ranging from 11.6 million pounds in 1965 to 46.9 million pounds in 1963. Exports in the first 10 months of 1968 were 41.5 million pounds--lower than any year for which we have statistics.

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The Industrial Fishery Products Situation and Outlook is published four times a year in January, April, July, and October.

The next issue is scheduled for release in April 1969.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1969 345-889/5

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Commercial Fisheries
Washington, D.C. 20240

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